“A PROSPECTIVE STUDY OF SEXUAL DYSFUNCTION IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA”

Dissertation submitted in partial fulfillment
of the requirements of

M.Ch DEGREE EXAMINATION

BRANCH 1V – UROLOGY

GOVERNMENT KILPAUK MEDICAL COLLEGE & HOSPITAL

CHENNAI - 600010

THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY

CHENNAI - 600032.

AUGUST 2015

CERTIFICATE

This is to certify that this dissertation entitled **"A PROSPECTIVE STUDY OF SEXUAL DYSFUNCTION IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA"** submitted by **Dr. J. SARAVANAN** appearing for **M.Ch (Urology)** degree examination in August 2015 is a original bonafide record of work done by him during the academic period of August 2012 to July 2015 under direct supervision and guidance in partial fulfilment of requirement of the Tamil Nadu Dr.M.G.R Medical University , Chennai, Tamilnadu, India.

Prof. Dr.N.MUTHULATHA
M.S, M.Ch, (URO)
Professor and Head of the Department,
Department of Urology,
Kilpauk Medical College,
Chennai - 600 010.

Prof.Dr.K.SARAVANAN
M.S, M.Ch, (URO)
Professor of Urology,
Department of Urology,
Govt. Royapettah Hospital,
Chennai - 600 020.

Prof. Dr. R. NARAYANABABU M.D, DCH
Dean,
Kilpauk Medical College, Chennai - 600010

CERTIFICATE BY THE GUIDE

This is to certify that this dissertation **"A PROSPECTIVE STUDY OF SEXUAL DYSFUNCTION IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA"** submitted by **Dr. J. SARAVANAN** appearing for **M.Ch UROLOGY** degree examination in August 2015 is an original bonafide record of work done by him during the academic period of August 2012 to July 2015 under my guidance and supervision in partial fulfilment of requirement of the Tamil Nadu Dr. M.G.R. Medical University, Chennai. I forward this to the Tamil Nadu Dr. M.G.R. Medical University, Chennai, Tamil Nadu, India.

.

Prof. Dr.M. ILANGOVAN, M.S.,M.Ch.,
Professor of Urology,
Department of Urology,
Kilpauk Medical College,
Chennai – 600 010.

DECLARATION BY THE CANDIDATE

I, **Dr. J. SARAVANAN,** solemnly declare that this dissertation titled **"A PROSPECTIVE STUDY OF SEXUAL DYSFUNCTION IN PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA"** was done by me in the Department of Urology, Kilpauk Medical College Hospital and Government Royapettah Hospital , Chennai under the guidance and supervision of **Dr.M.ILANGOVAN, M.S.,M.Ch.,** Professor of Urology, Kilpauk Medical College.

This dissertation is submitted to the Tamil Nadu Dr.M.G.R. Medical University, Chennai-600032 in partial fulfilment of the University requirements for the award of the degree of M.Ch., Urology.

Place : Chennai

Date : 30-03-15

(Dr. J. Saravanan)

ACKNOWLEDGEMENT

I owe my thanks to **Prof. Dr. R. NARAYANABABU, M.D.,DCH** Dean, Kilpauk Medical College, Chennai, for permitting me to utilize the facilities and conducting this study. I sincerely thank the members of Ethical Committee for approving this study.

I am extremely grateful to Prof**. Dr. N.MUTHULATHA, M.S., M.Ch.,** Professor of Urology and Head of the Department, Department of Urology, Kilpauk Medical College and Hospital, Chennai-10, for her encouragement and permission for granting unrestricted access to utilising the resources of the Department.

I am extremely thankful to **Prof. Dr.K.SARAVANAN , M.S.,M.Ch.,** Professor of Urology, Government Royapettah Hospital for devising this study, valuable guidance, motivation, expert advice and help rendered during this study.

I am extremely thankful to **Prof. Dr M. .ILANGOVAN, M.S., M.Ch., Prof. Dr. R. GOVINDARAJAN , M.S., M.Ch,** Professors, Department of Urology, Kilpauk Medical College for their constant encouragement, valuable guidance, motivation, expert advice and help rendered during the procedures and throughout this study.

I also extend my sincere thanks to all the Assistant Professors of our department **Dr. P.LEELA KRISHNA, M.Ch., Dr. R.JAYAGANESH, M.Ch., Dr. A.SENTHILVEL, M.Ch., Dr. D. JASON PHILIP M.Ch , Dr. V. EZHIL SUNDAR M.Ch., and** for helping me with their time and advice during this study.

I extend my thanks to m y colleagues in my department for their valuable help.

I thank my family for being there for me always .

The blessings of Almighty without which this work would not have been possible is acknowledged

TABLE OF CONTENTS

ABBREVATIONS

LUTS	-	Lower urinary tract symptoms
BPH	-	Benign prostatic hyperplasia
ED	-	Erectile dysfunction
EjD	-	Ejaculatory dysfunction
HD	-	Hypoactive desire
QOL	-	Quality of life
AUR	-	Acute urinary retention
IPSS	-	International Prostate symptom score
AUA	-	American Urological Association
MMAS	-	Massachusetts Male Aging study
MSAM	-	Multinational Survey of the Aging Male
BMI	-	Body mass index
NO	-	Nitric oxide
NOS	-	Nitric oxide synthetase

5 HT- 5 Hydroxy tryptamine

ABEJAC – ABnormal EJACulation with alfuzosin and tamsulosin

TUMT	-	Transurethral microwave thermotherapy
TURP	-	Transurethral resection of prostate
IIEF	-	International Index of Erectile function
MSF	-	Male sexual function
5 AR	-	5 Alpha reductase

INTRODUCTION

INTRODUCTION

Sexual dysfunction is a highly prevalent condition in ageing men that considerably affects their quality of life, although it is a frequently neglected aspect of healthcare. The main predictors of sexual dysfunction are age and cardiovascular comorbidities such as hypertension, heart disease, hypercholesterolaemia and diabetes. Despite the increased prevalence of sexual dysfunction with age, health-related problems and psychological factors, there is evidence that many older men remain sexually active.

The male sexual dysfunction includes three components,

− erectile dysfunction (ED) ;

− ejaculatory dysfunction (EjD) ; and

− hypoactive desire (HD) ; loss of desire or decreased desire.

All these symptoms are seen common in elderly. Until recently, it was widely assumed that symptoms of male sexual dysfunction were a natural consequence of the aging process. A decrease in sexual function and sexual activity is not an inevitable consequence of aging. Older individuals retain significant interest in sexuality and a large proportion of older men and women remain sexually active. Furthermore, sexuality is a factor that correlates with individuals' perception of their well-being and quality of life. With the development of new measures for assessing sexual function and new medications for the treatment of ED, effective management of sexual

problems is now possible. Recently, the severity of lower urinary tract symptoms (LUTS) has also been identified as a crucial risk factor for sexual dysfunction, independent of age and comorbidities.

Reduced rigidity and reduced ejaculate volume are the highly prevalent symptoms in ageing men. But reduced rigidity and pain on ejaculation are the most bothersome, affecting the quality of life. The effect such things has on one's life is very significant nowadays.

BPH patients have been found to have much more prevalence of sexual dysfunction than in men without them, even after controlling for confounding variables such as age and co morbid illnesses. Hence LUTS/BPH is considered to be an independent risk factor for sexual dysfunction. The reason for the association being a common underlying pathology or the psychological effect of LUTS / BPH on sexual function needs to be confirmed. Most elderly men report regular sexual activity and consider their sex life as an important dimension of their quality of life (QoL) despite a decline in the frequency of sexual intercourse, as well as in overall sexual functioning, However, most patients with LUTS/BPH experience a negative effect of LUTS symptoms due to BPH on their sex life. Hence, treatment of LUTS / BPH should also aim to at least maintain or, if possible, improve sexual function in an individual [1] .

We decided to evaluate the prevalence of sexual dysfunction in the BPH patient population in our set-up to see the correlation between BPH and sexual dysfunction and also to analyse the amount of importance attached to the sexual quality of life.

AIMS AND OBJECTIVES

AIMS AND OBJECTIVES

To assess and analyse the prevalence of sexual dysfunction in patients with BPH patients.

To assess the various effects of BPH on sexual function

To assess the effects, the various treatment options for BPH have on sexual function.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Prevalence of BPH / LUTS :

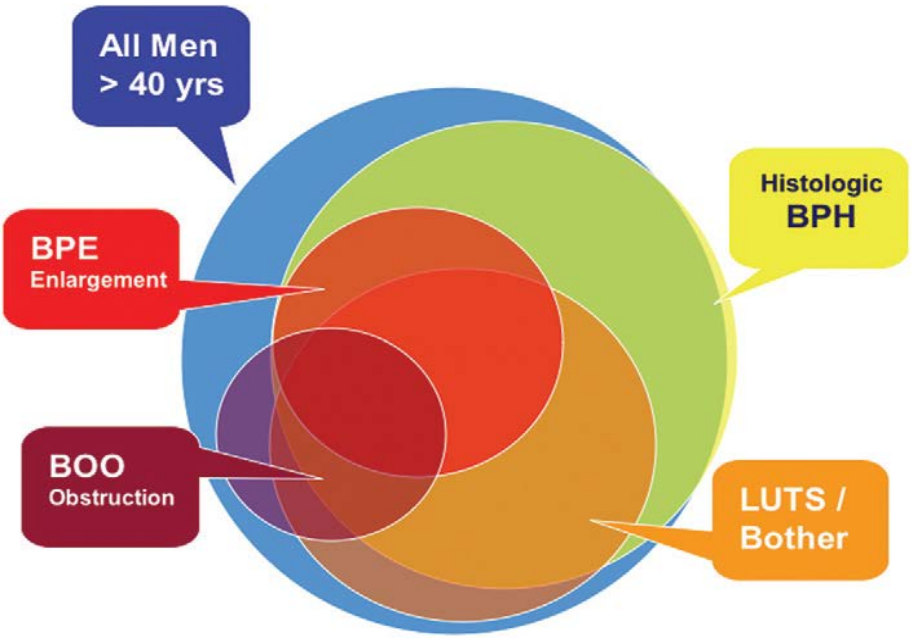
Since long, LUTS was considered to be part and parcel of normal aging process. Till 1984 the definite relation between aging and LUTS was not evaluated clearly. Meta analysis by Barry and colleagues[2] in 1984 analysed the data from five studies demonstrating that BPH was not evident in men younger than 30 yrs and the prevalence rose with each age group, peaking at 88% in men in their 80s.The prevalence started to increase from the fifth decade of life, reaching more than 90% in the 90"s age group..

Clinical Prevalence:

Historically BPH has been thought to manifest as LUTS, impaired bladder emptying (Increased PVR), Acute urinary retention, detrusor instability, urinary tract infection, chronic urinary retention, hematuria and chronic renal insufficiency. The enlargement of prostate caused Bladder outlet obstruction due to both static and dynamic factors. The static obstruction was due to prostatic stromal and epithelial elements. The dynamic obstruction was due to prostate smooth muscle.

A certain proportion of all men older than 40 yrs develop histologic evidence of BPH, hyperplasia of prostate. Only some among them will go on to develop measurable prostate enlargement. The symptoms arising out of this

also varies among individuals. This is illustrated by the diagram illustrated below.



The overall prevalence of LUTS was around 30% in the fifth decade. The incidence of progression is around 17% with the most common being increase in symptom score,The incidence of AUR is less than 2%. The probability of need for surgical intervention is around 5%.

Symptom Severity and Frequency

Standardised scoring system for patients with LUTS have been developed. The international Prostate Symptom Score (I-PSS) is based on AUA symptom index, which finds the answers to seven questions concerning urinary symptoms. The answers are assigned points from 0 to 5 and so the total score can range from 0 to 35 (asymptomatic to very symptomatic). This is recommended for not only the initial evaluation but also during and after treatment for follow up.

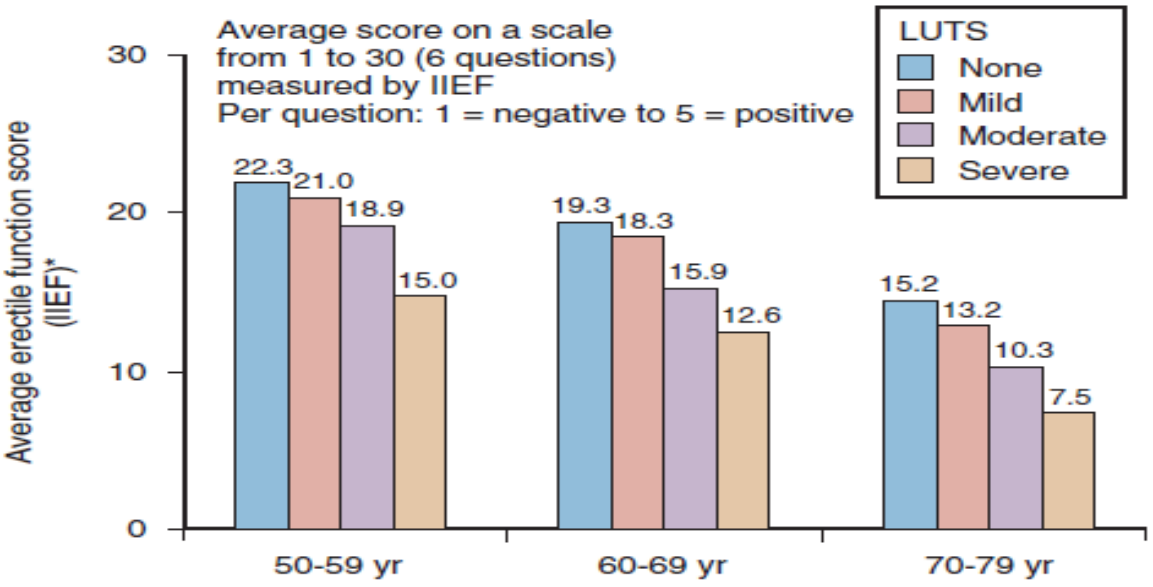
Sexual dysfunction in aging men & LUTS patients:

Consistent associations between the pathophysiological mechanisms of LUTS and the related prostatic enlargement of BPH as well as certain treatments for this condition and the impact this might have on both the erection and ejaculation components of the sexual response have been demonstrated[4].

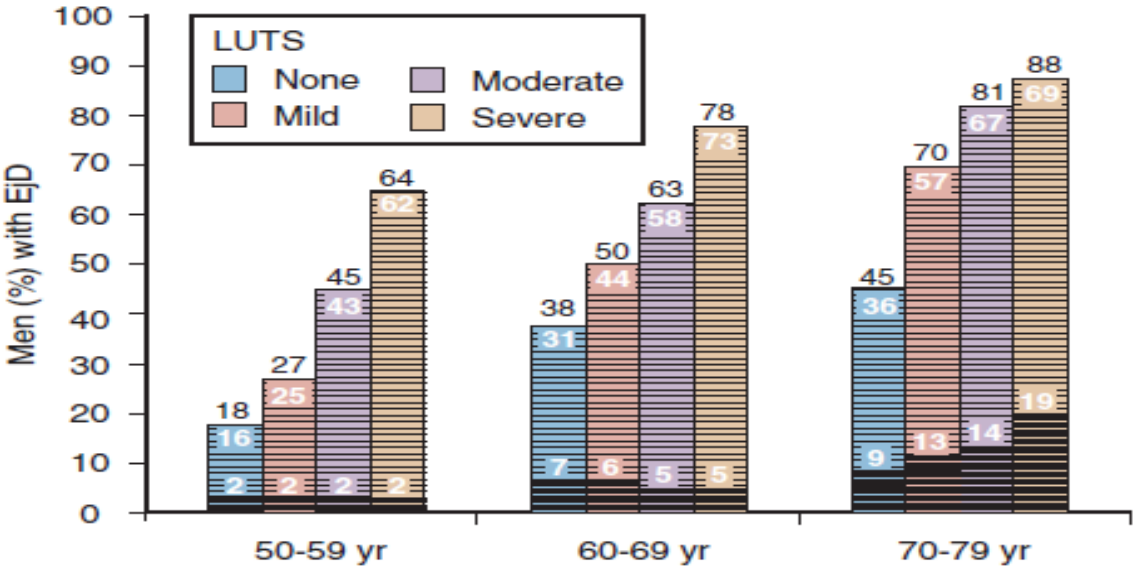
Significant associations have been found between aging and altered sexual function in older males. Such an association can affect the sexual quality of one's life cery much. Similarly , the severity of LUTS in a male can have a bearing on his sexual function independently.

The two components of sexual function more consistently affected by LUTS include erectile function and ejaculatory dysfunction. Various studies have correlated such associations. One such study result is illustrated below.

Relation between LUTS severity with ED and EjD



A Base: men sexually active/sexual intercourse during past 4 weeks, *as measured by IIEF.



Base: men who have erections, *As measured by DAN-PSS *sex*.

B Net reduced amount of semen No ejaculate

Epidemiological studies:

MMAS (Massachusetts Male Aging Study):

A community based, random sample observational survey was carried out in men 40 to 70yrs old during the period 1987-1989 in Boston MA which was termed the MMAS study[5] . Sexual activity questionnaire was used to grade the erectile potency . ED is a highly prevalent condition that often occurs with other risk factors, both psychosocial and medical was the MMAS study observation . Further longitudinal survey for 8 yrs after MMAS clearly demonstrated that incidence of ED has a positive correlation with increase in age.

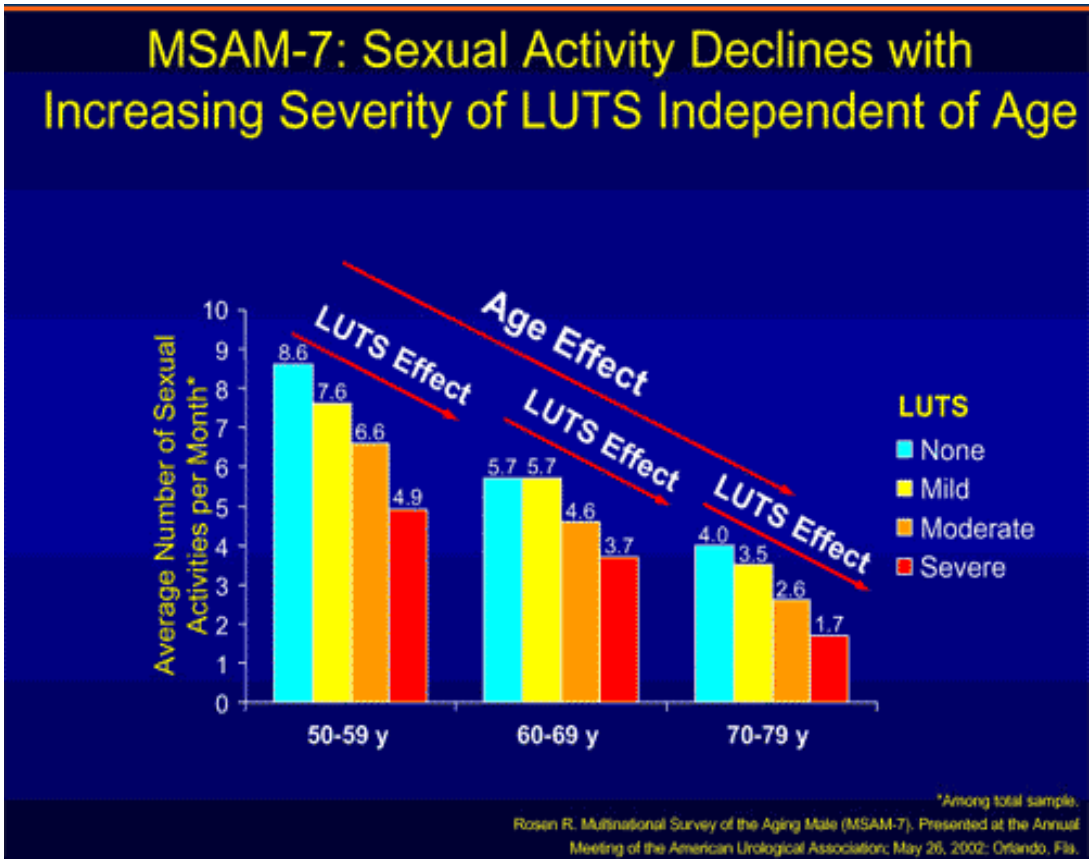
Cologne Male Survey:

Using the Odds ratio, the Cologne Male Survey [6] was carried out in the same method. LUTS had a risk ratio of 2.11 in patients with ED was the study conclusion. The following illustration shows the study outcome.

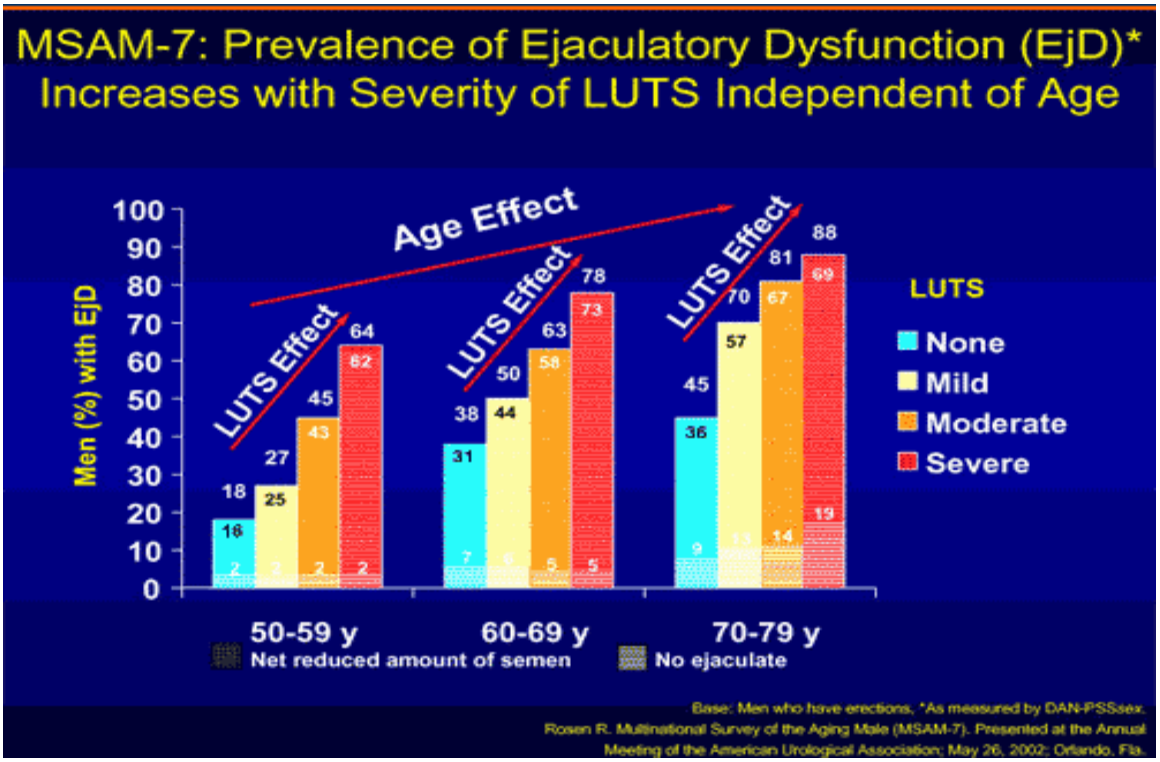
The Multinational Survey of the Aging Male (MSAM-7):

Another study which was conducted in the 6 European countries and United States was the Multinational Survey of the Aging Male (MSAM-7)[7] study . The relationship between LUTS and sexual dysfunction in aging men was investigated by easily interpretable mailed questionnaire.

Consistency was noticed among the results from different countries. 83% of the sample population reported sexual activity. Among them 71% were sexually active .Sexual dysfunction though had a strong relation to both age and severity of LUTS , the association between sexual problems and LUTS was found to be independent of co-morbidities such as hypertensive disease, diabetes, atherosclerosis and cardiac disorders. But the consistent major finding was that the severity of LUTS is a major risk factor for sexual dysfunction [4] (both erection and ejaculation problems) independent of other risk factors .



Multinational Survey of the Aging Male-7: sexual activity declines with increasing severity of lower urinary tract symptoms independent of age



Multinational Survey of the Aging Male-7: prevalence of ejaculatory dysfunction (EjD) increases with severity of lower urinary tract symptoms independent of age

The conclusion of the study was in a men who are are sexually active , definitely the presence of LUTS and its severity had a significant influence on their sexual life. The more severe the LUTS more profoundly did it affect the sexual life. Individuals in all age groups are almost equally affected in the study.

Epidemiological studies summary:

From available epidemiological data it is clear that there is a global association between erectile dysfunction and LUTS caused by BPH.. But it was not the same until the middle of 90s, when many analytical studies evaluating the epidemiology concluded a significant association. It was later followed by many authors suggesting a definitive association between various aspects of sexual dysfunction and severity of LUTS.

Pathophysiology – LUTS & Sexual dysfunction:

Lower urinary tract symptoms most commonly caused by BPH apart from its troublesome symptoms of storage and voiding symptoms can also be associated various forms of sexual dysregulatory functions. Studies have been conducted to see any common link in the etio pathogenesis of both disorders. If such a common link could be uncovered it could lead to various benefits for the male patient during the management.

LUTS and BPH:

BPH arises due to excessive growth in either the stromal or epithelial components or both .Relative increase in smooth muscle tone in the bladder neck and prostate capsule will lead to symptoms which are often disproportionate to the size of the prostate gland in most men[8]. . Stimulation of alpha 1-adrenergic receptors[1] causes alteration in tone of prostate smooth muscle [8]. Other receptors include,

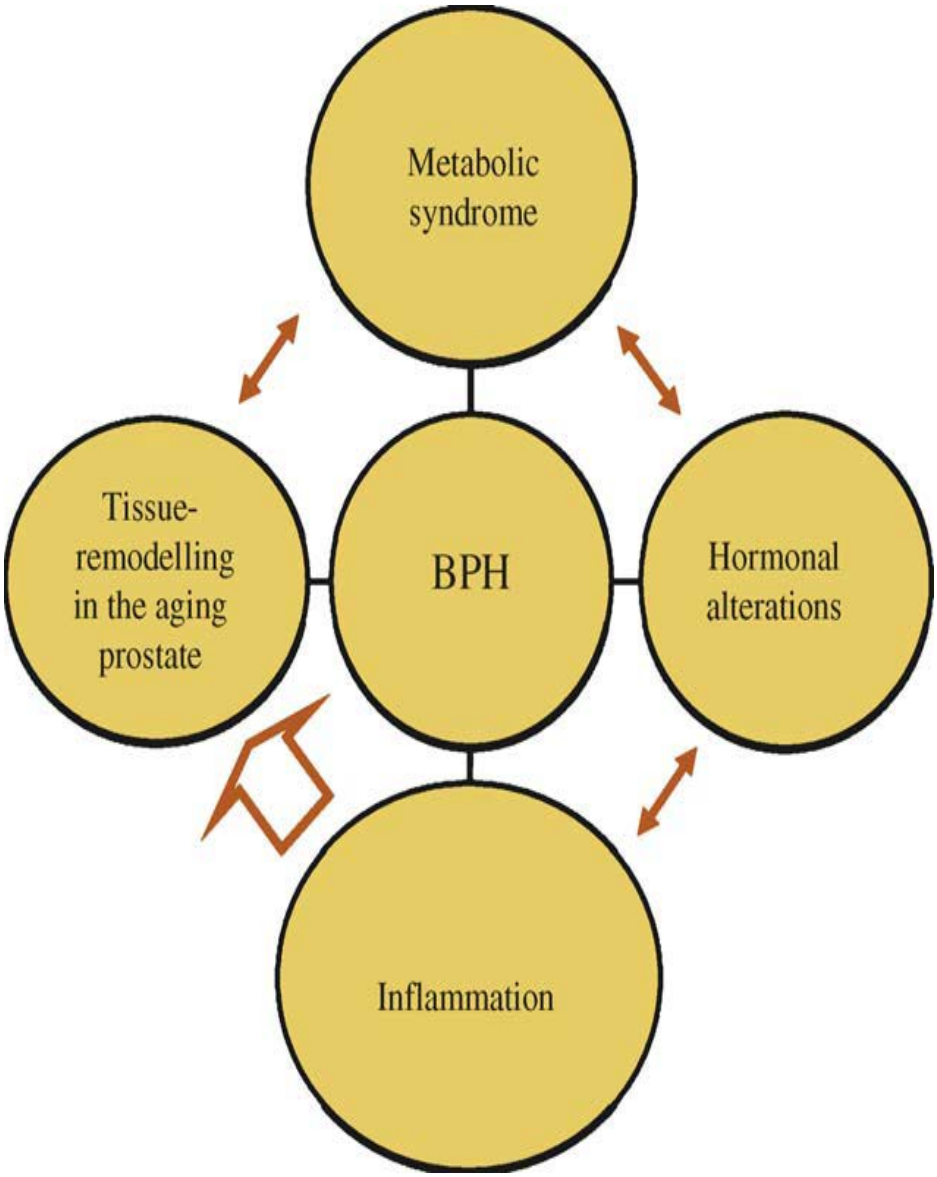
- serotoninergic (5-HT2A),
- histaminergic (H1),
- dopaminergic,
- muscarinic.[10,11,12]

Other than the receptors the other mechanisms which would increase the risk of BPH include ,

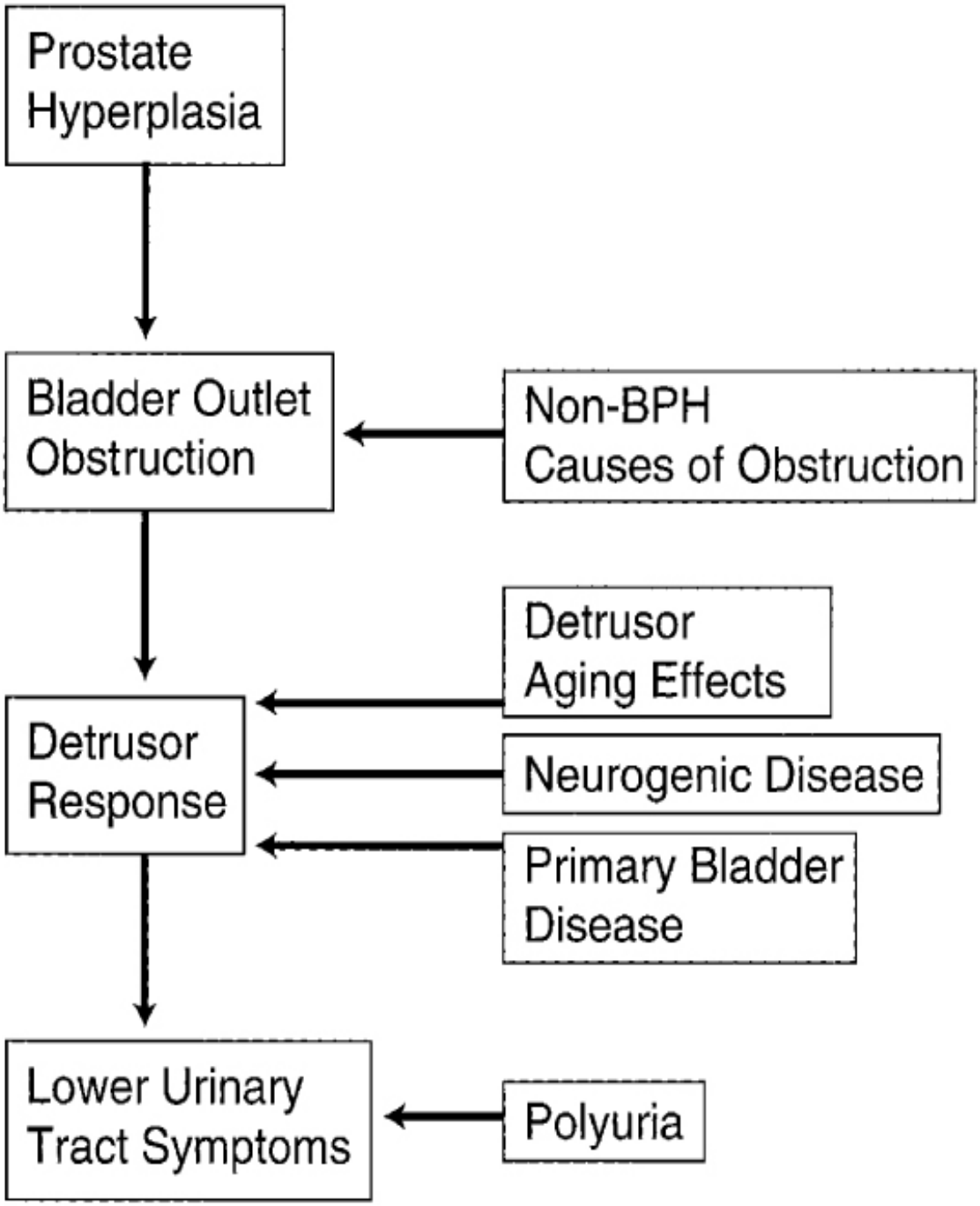
- Inflammation,
- Hormonal alterations,
- Tissue remodelling due to aging process
- Metabolic syndrome.

In most individuals, all the above mechanisms act in different proportions. The age at which such an interplay starts giving rise to BPH varies from region to region.

Once the BPH has happened in an individual , there is variations in the growth of the gland among individuals. The factors leading such a variation could be manifold.



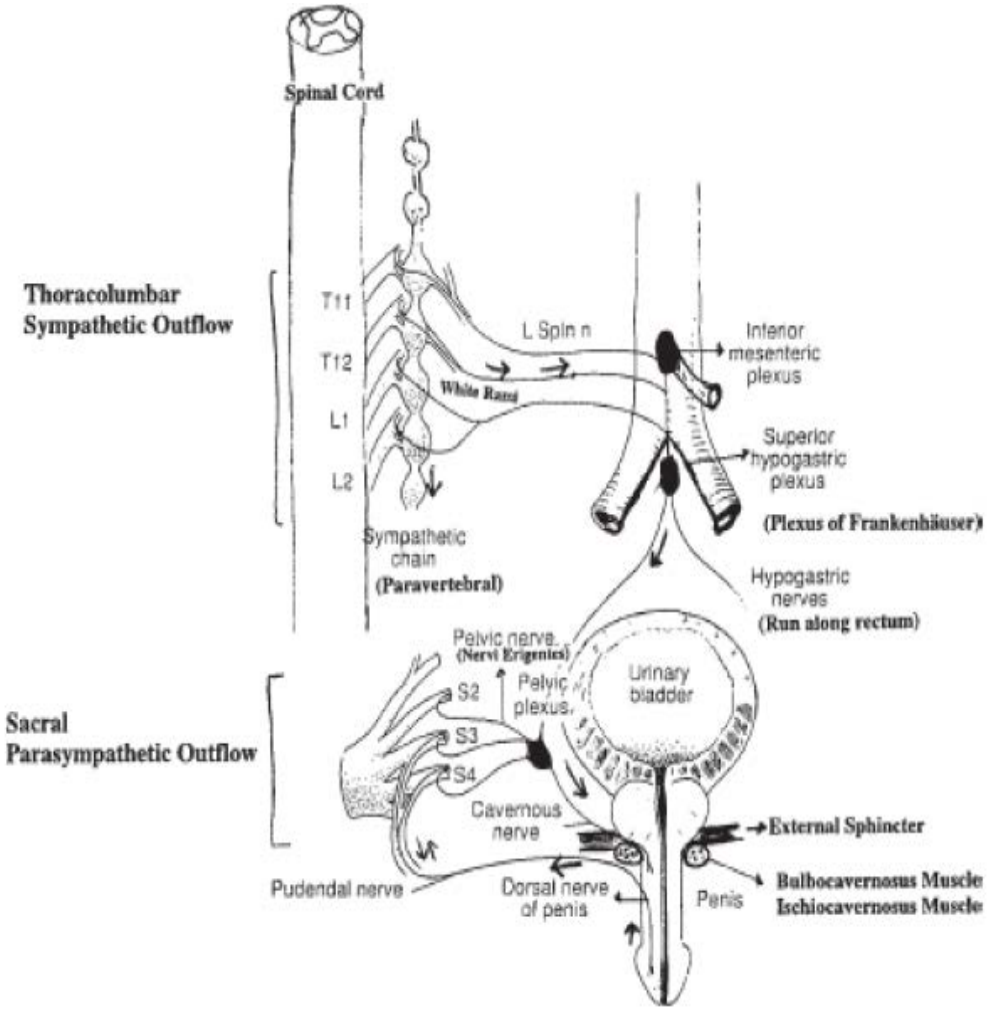
Factors influencing the pathogenesis of BPH



Pathophysiological Outcomes of BPH

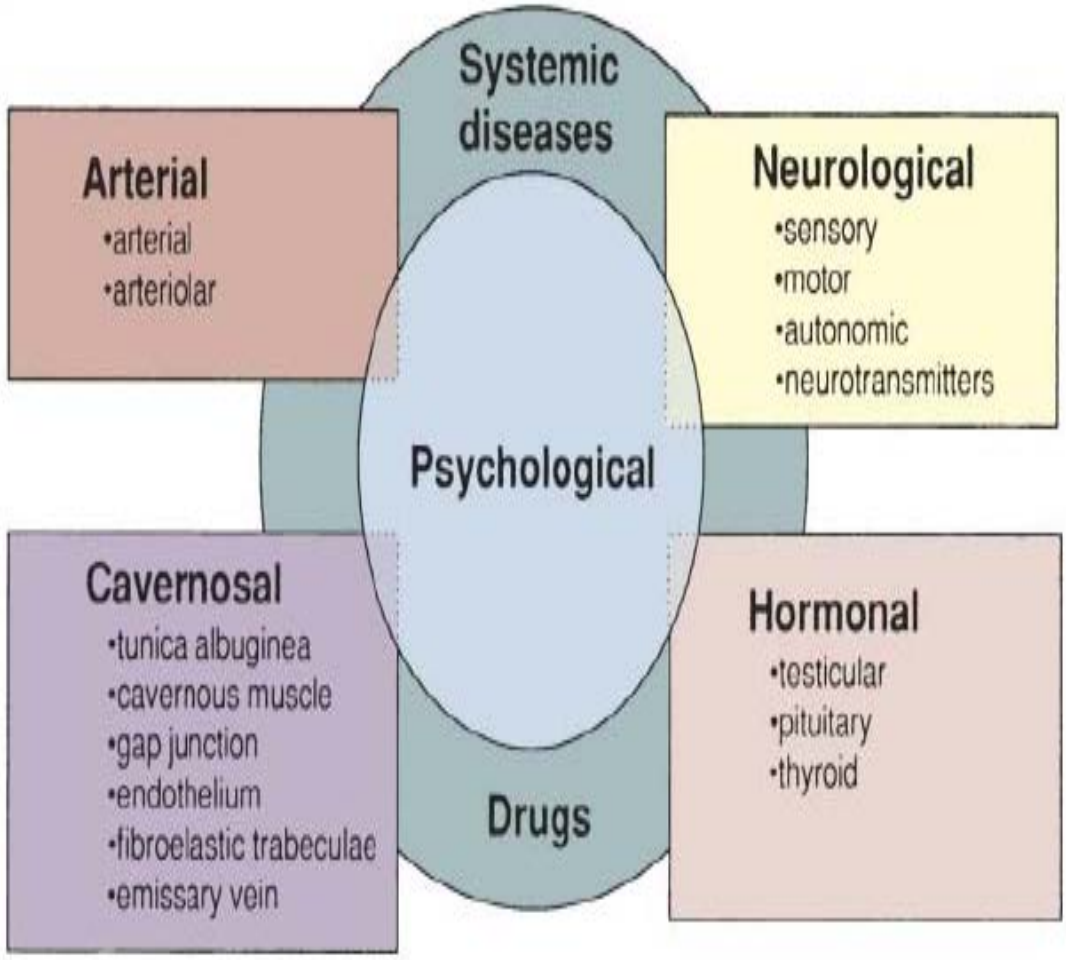
Erectile Dysfunction:

The normal mechanism involved in erection and ejaculation are illustrated



There are many regulators that coordinates detumescence and penile erection. The entire mechanism is regulated by both peripheral and central mechanisms involving multiple neurotransmitter systems[14] Neurotransmitters which act centrally and regulate consists of dopamine , NO ,acetylcholine, serotonin, oxytocin and noradrenaline[15] Obligate promotors of penile detumescence (contraction) in the penis include noradrenaline and endothelins.

NO from endothelium in turn mediates in the maintaining the relaxed state [20,22] .[1] ED caused by any changes in the steps.. Common cause of ED is vascular disease. Other causes and mechanisms are illustrated in the diagram below .



ED prevalence in correlation with LUTS severity

	46–60 years	61–75 years	>75 years	Total
	Diagnosed with ED			
IPSS				
0–7	1859 (48.4%)	2510 (53.6%)	33 (71.7%)	5313 (53.4%)
8–19	7936 (57.6%)	16121 (65.3%)	1239 (58.4%)	28815 (62.3%)
20–35	1442 (64.3%)	3922 (73.5%)	44 (77.2%)	6440 (71.1%)
No IPSS available	3932 (65.3%)	7677 (70.2%)	63 (64.9%)	14478 (67.7%)
total	14989	30230	1379	54446

.

The above diagram shows the relation between LUTS severity and Erectile dysfunction. There was a clear increase in the prevalence in the erectile dysfunction with increasing severity of LUTS.

Studies on the incidence of ED

Study	Country	Sample	Prevalence	Significant risk factors
Namasivayam et al. [17]	UK	140 men aged 43 to 89 y with LUTS/BPH	ED: 46% EjD: 38% HD: 66%	ED: age EjD: age HD: age
Frankel et al. [18]	12 countries	1271 men aged >55 y with LUTS/BPH	ED: 60% EjD: 62% Pain during ejaculation: 17%	ED: age, LUTS EjD: age, LUTS Pain during ejaculation: LUTS
Baniel et al. [19]	Israel	131 men aged 55 to 74 y with LUTS/BPH	ED: 67%	ED: severe LUTS
Tubaro et al. [20]	Italy	877 men with LUTS/BPH	ED: 58% EjD: 56% Pain during ejaculation: 20%	ED: LUTS EjD: LUTS Pain during ejaculation: LUTS
Leliefeld et al. [21]	Netherlands	670 men aged ≥50 y with untreated LUTS/BPH	ED: 41% HD: 32%	ED: LUTS*, urologic comorbidity bladder stone* HD: LUTS*
Brookes et al. [22]	UK	340 men aged 48 to 90 y with LUTS/BPH	ED: 71% EjD: 70% Pain during ejaculation: 18%	ED: age, LUTS EjD: age Pain during ejaculation: age
Vallancien et al. [23]	France, Denmark, Netherlands, Switzerland, UK	927 men aged 36 to 92 y with LUTS/BPH	ED: 62% EjD: 63% Pain during ejaculation: 23%	ED: age*, LUTS*, BMI >25 kg/m hypertension treated with CCB* EjD: age*, LUTS*, BPH surgery* Pain during ejaculation: LUTS*

BMI: body mass index; BPH: benign prostatic hyperplasia; CCB: calcium channel blocker; ED: erectile dysfunction; EjD: ejaculatory dysfunction; hypoactive desire; LUTS: lower urinary tract symptoms.
*Independent risk factor based on multiple logistic regression analysis.

Theories involved:

(1) The Nitric Oxide / Nitric oxide synthetase theory:

NO is a potent vasodilator which is a multifunctional molecule. The NO/NOS theory suggest s that reduction in NOS/NO level s will cause LUTS.[187]

(2) Rho-kinase:

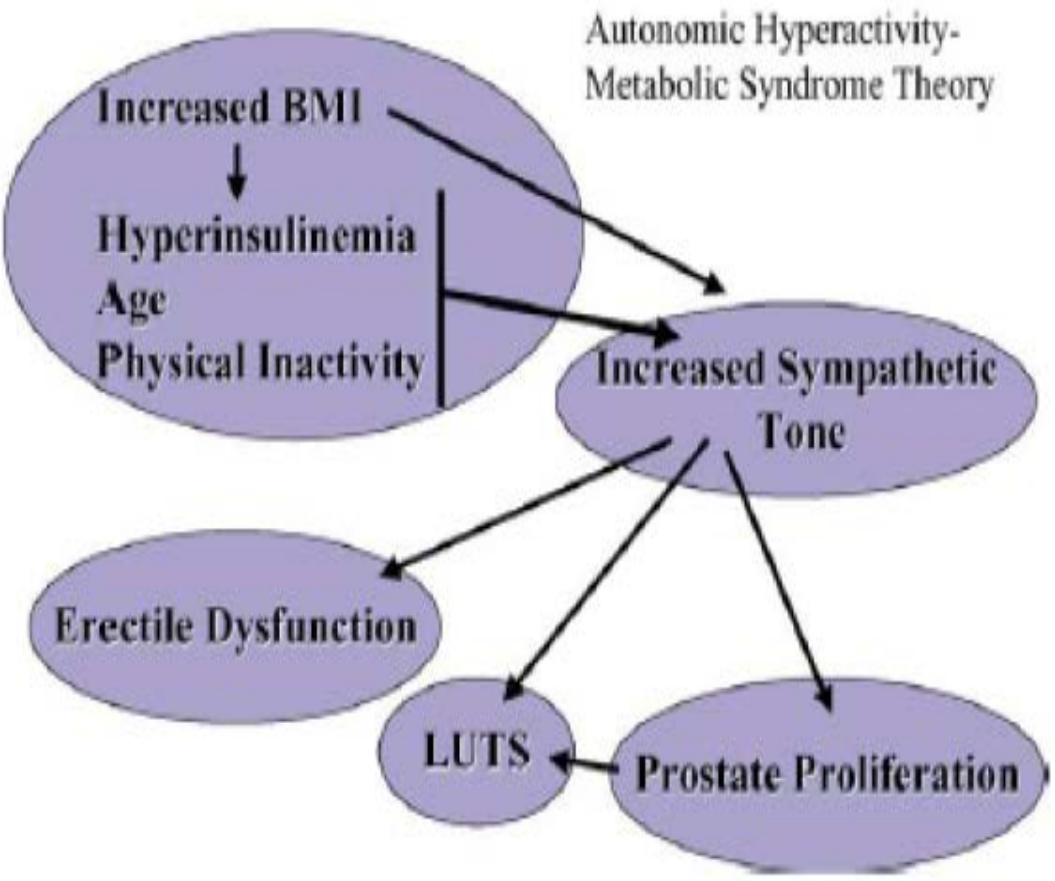
Increased Rho-kinase activity, and consequently increased calcium sensitivity of the contractile machinery, can be found in the detrusor or corpus cavernosum of rabbits with partial BOO .Mechanism could probably be associated with increased smooth muscle activity found in both LUTS/BPH and sexual dysfunction, are dependent on Rhokinase activity[19]. Therefore it is tempting to speculate that increased Rho-kinase activity is the common link between LUTS and sexual dysfunction.

(3) Pelvic atherosclerosis:

Elderly men have a high prevalence of vascular risk factors (hypercholesterolaemia, smoking hypertension, diabetes,) . This could suggest that atherosclerosis could be involved in the aetiology of BPH. Increased production of TGF-β1 can result from Chronic ischaemia..

(4) Autonomic hyperactivity and metabolic syndrome:

Increased Autonomic activity can result from increased BMI , Increased insulin levels, and decreased physical activity with sedentary life. All these affect BPH growth causing LUTS and vasomotor forces causing sexual dysfunction. The mechanism through which this metabolic syndrome leads to sexual dysfunction is illustrated below :



Ejaculatory dysfunction:

The process of emission and ejaculation are mediated by sympathetic and parasympathetic systems. While the emission is mediated by the sympathetic system, the parasympathetic system mediates the ejaculation process..The receptors involved in regulation of ejaculation include,

- 5HT1A receptors
- 5-HT2C receptors.

In the rat may have a role in ejaculatory behaviour [20]. Waldinger and colleagues based on the outcomes of animal studies concluded that these receptors play a role in premature ejaculation[21] in males..

Possible common components:

(1) **Alpha 1-Adrenergic receptors:** The smooth muscle contraction is regulated by various receptors which can be divided as,

- prostatic stromal cells- Alpha1A- and alpha 1D-receptors [22,23**7**]
- epithelial cells - Alpha1B-receptors,
- vascular smooth muscle – Alpha 1A and Alpha 1B [24],
- urethra and bladder – Alpha1a and Alpla1D

Alpha 1-adrenergic receptors mediate the contraction and growth of vascular smooth muscle cellss. Alpha 1-receptor expression is increased in certain human arteries. There was a difference in the predominance of the receptors in human arteries according to age of the individual. In young

males, Alpha1A-adrenergic receptors were the predominant subtype, but in older males the Alpha 1B-adrenergic receptor subtype predominated ..

Other possible mechanisms include:-

(2) Dysfunction of Endothelium:

It has been documented that endothelium dysfunction through defective breakdown mechanism of Nitric oxide[25,27] or any abnormalities in the Nitric oxide synthetase enzymes can lead to sexual dysfunction. This mechanism has been proved by various studies around the world. This mechanism is also the target for evolving drug management for erectile dysfunction.

(3) Sex hormones:

An intact sex hormone-signaling axis is essential for the normal growth and development of the normal prostate gland . The main androgens involved are Testosterone and Dihydrotestosterone[31,33] . Any alteration in the synthesis of these hormones or its action on target tissues will result in Sexual dysfunction.

The associations between the above mechanisms and LUTS and sexual dysfunction is illustrated below :

Possible links	LUTS / BPH	ED	EjD
↑ α - adrenergic activity	✓	✓	✓
Alteration in α_1 –adrenergic receptor subtypes	✓	✓	✓
↓ NO bioactivity (endothelial dysfunction)	✓	✓	?
Testosterone / estrogen imbalance	✓	✓	✓
5 – HT	?	✓	✓

Treatment effects:

All the treatment options like surgery, minimally invasive therapies, and pharmacologic therapies can all improve LUTS and the peak urinary flow rate . But the same treatment modalities can also cause or exacerbate sexual dysfunction. The reported incidence rates of ED after surgery , minimally invasive therapies, pharmacologic monotherapy or combination therapy are 10 % , 1-3% , 3%–10% respectively . Similarly the incidence rates for EjD after surgery, minimally invasive therapies, pharmacologic monotherapy or combination therapy are 65 % , 4-16 %, 0%–10% respectively.

Impact of drug treatment for BPH on sexual function:

5 alpha reductase inhibitors:

Conversion of testosterone to 5α-dihydrotestosterone (DHT) is inhibited by 5α-reductase inhibitors (finasteride, dutasteride). They are ideal for LUTS patients with large prostates.

The various 5 alpha reductase inhibitors analysed in various studies for the treatment of BPH which affected sexual function include ,

- Finasteride
- Dutasteride

Finasteride:

Finasteride is a specific inhibitor of Type 2 5 alpha reductase enzyme.

It has varied effects on the Prostate and its diseases.

- BPH- Lowers the IPSS score , Increases peak flow rate and decreases prostate volume
- Decreases Acute urinary retention episodes and the indications for surgical treatment of BPH
- Helps in managing intractable hematuria in BPH and following surgery.
- Lowers PSA in carcinoma prostate.

Side effects related to sexual function occur significantly more frequently in men treated for 1 year with finasteride 5 mg OD than in those receiving placebo. .Sexual dysfunction in patients on long duration treatment with Finasteride include,

- Decreased Ejaculatory volume,
- Loss of libido
- Decrease in potency

Dutasteride:

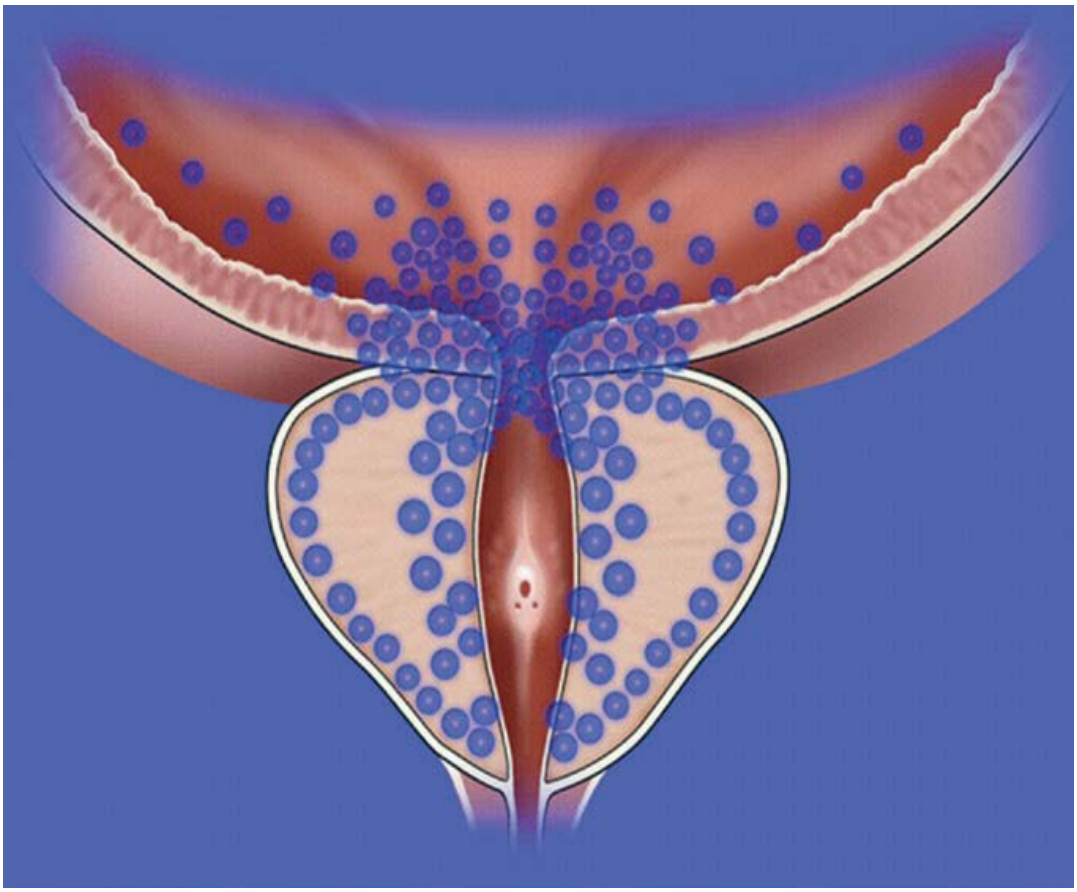
Dutasteride is another drug which inhibits both isoforms.

The treatment effects with regard to BPH was similar to finasteride.

The sexual side effects were also comparable between the two in a Direct comparative study between dutasteride and finasteride which was administered for 1-year duration to1630 patients.

α1-adrenergic blockers:

Distribution of the various Alpha 1 receptors in the lower urinary tract illustrated below. It can be seen that the receptors are scattered almost equally throughout the lower urinary tract. This probably explains the combined effect of these drugs on both LUTS and sexual function in an individual..



The outcome of the ABEJAC study went on to confirm that a functioning bladder neck was not associated with and did not have a role in the various effects of tamsulosin and alfuzosin with respect to ejaculatory function. This was also substantiated by many other studies that followed . Almost identical outcomes were reported .

Enough evidence was available that proved that tamsulosin causes dose-dependent reduction in the amount of ejaculate this effect starts from the minimum dose of Tamsulosin ie. from the 0.2 mg dose. As the retrograde

ejaculation as the possible underlying mechanism was ruled out ,several additional hypotheses have been studied.

The relative incidences of the various side effects due to the different drugs in this group is illustrated below:

Adverse effects	terazosin	Doxazosin	tamsulosin	alfuzosin
Post.hypotension	3.9%	1.7%	-	-
Impotence	1.6%	-	-	-
Ejaculation dysfunction	-	-	8.4%-18%	-
Loss of libido	-	-	1%-2%	--
Somnolence	3.6%			
Dizziness	9.1%	15.6%	15%	5.7%

Incidence rates of sexual side effects in various phase III studies of Medical therapies for LUTS/BPH

Drug	Treatment duration	ED	EjD
Alfuzosin 10 mg [34] Placebo	12 weeks	1.5% 0.6%	<1% <1%
Tamsulosin 0.4 mg 0.8mg[35] Placebo	13 weeks	<2% <2% <2%	8.4% 18.1% 0.2%
Dutasteride 0.5mg[36] Placebo	2 yrs	7.3% 4.0%	2.2% 0.8%
Finasteride 5mg[37] Placebo	1 yr	8.1% 3.7%	0.8% 0.1%
Doxazosin 4-8mg[38] Finasteride5mg Combination Placebo	1 yr	14.4% 18.5% 22.6% 12.2%	4.5% 7.2% 14.1% 2.3%

Therapy	Erection	Ejaculation	Libido
	Median%	(95% CI)	
Alpha blockers			
Tamsulosin	4(1-8)	10(6-15)	
Alfuzosin	3 (1-6)		1(0-4)
Doxazosin	4(1-8)	0(0-2)	3(2-6)
Terazosin	5(3-8)	1(1-2)	3(1-5)
Hormonal			
Finasteride	8(6-11)	4(3-5)	5(4-7)
Combined			
Alfusozin/Finasteride	8(5-11)	1(0-2)	2(1-4)
Terazosin/Finasteride	9(1-13)	7(5-10)	5(3-8)
Doxazosin/Finasteride	10(7-14)	3(2-6)	3(1-5)
Placebo	4(3-5)	1(1-1)	3(3-4)

Sexual Function Following TURP:

Surgical interventions for LUTS/BPH include open procedures and minimally invasive procedures like TURP. The yardstick against which all the new minimally invasive therapies were measured was, TURP. This was a very significant technologic innovation when it was introduced, and it went through a considerable amount of evolution before it reached the high levels of excellence

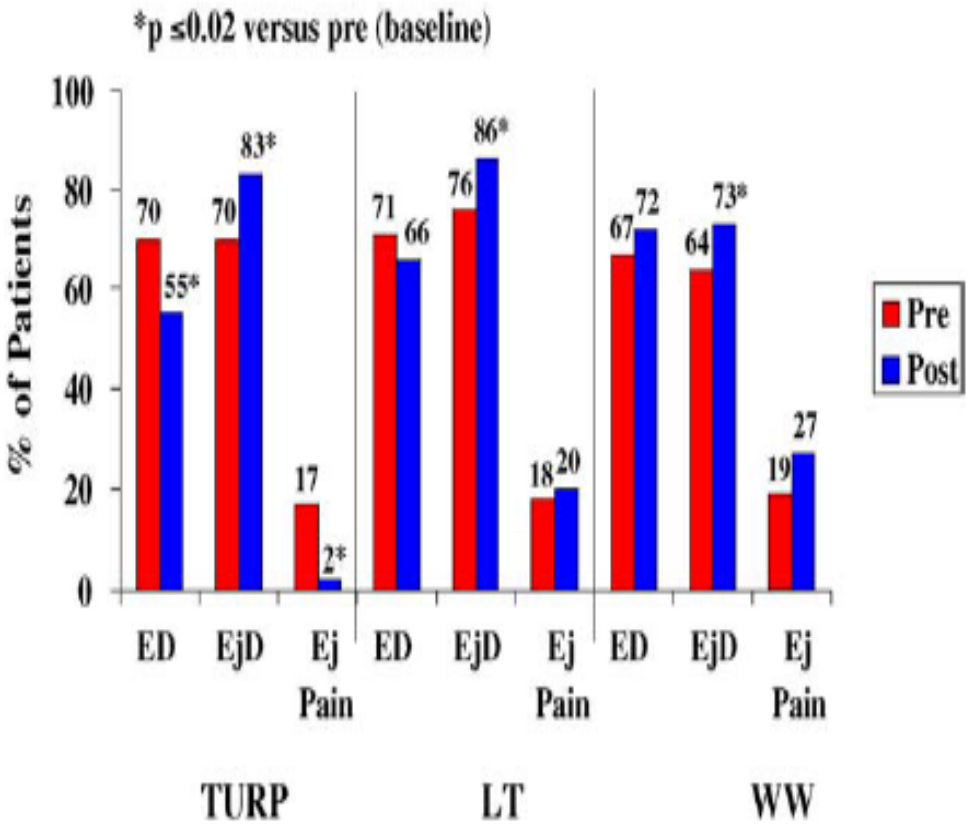
that it has reached today. TURP even today is considered the gold standard treatment for BPH worldwide.

TURP is not without its share of adverse effects and sexual dysfunction is one frequent event seen in many patients undergoing TURP. ED and EjD particularly retrograde ejaculation is documented in a significant number of patients . The incidence of retrograde ejaculation is close to 100% in patients undergoing TURP . The loss of bladder neck after TURP is the predominant reason .

The question of whether and how often does TURP result in sexual dysfunction cannot be decided firmly by the available current literatures.

Overall, from the currently available literature it is imperative to consider the following points:

1. Pre TURP patient education and clarification
2. Pre and Post TURP objective evaluation of Sexual function.
3. Have strict indication criteria for surgery in younger patients
4. In potent, sexually active patients with a small prostate , a careful resection of the prostate in the area of the neurovascular bundle.



The impotency seen immediately after TURP may be temporary. A study in potent men using the snap-gauge test 4 days and 3 months after TURP showed a high impotency rate in the immediate postoperative period which significantly improved at retesting.[38] Neuropraxia from thermal injury or the emotional stress of surgery have been proposed as possible mechanisms.[39] It is important to note, however, that a good number of these studies were retrospective and that a preoperative examination of erectile function was not performed. The high percentage of postoperative retrograde ejaculation is viewed as a negative influence on sexuality. Often, it is difficult for patients to differentiate between ejaculatory and erectile dysfunction.

Analysis of Sexual function:

Many male sexual function evaluation profiles and sexual dysfunction questionnaires have been formulated .Previously , the main aim of these questionnaires was to differentiate nonpsychogenic ED from psychogenic ED. With detailed research, more recently a variety of self-reporting measures for assessing the levels of male sexual function or dysfunction have been formulated. The greatest use in clinical trials of these Self-administered questionnaires (SAQs) has been to evaluate the Sexual dysfunction. The most commonly used are,

International Index of Erectile function IIEF[40],

Brief Male Sexual Function Inventory (BMSFI) ,

Dysfunction Inventory for Treatment Satisfaction (EDITS).

Other self-report measures include,

the Derogatis Sexual Function Inventory (245 items),

the Center for Marital and Sexual Health Questionnaire (18 items), and

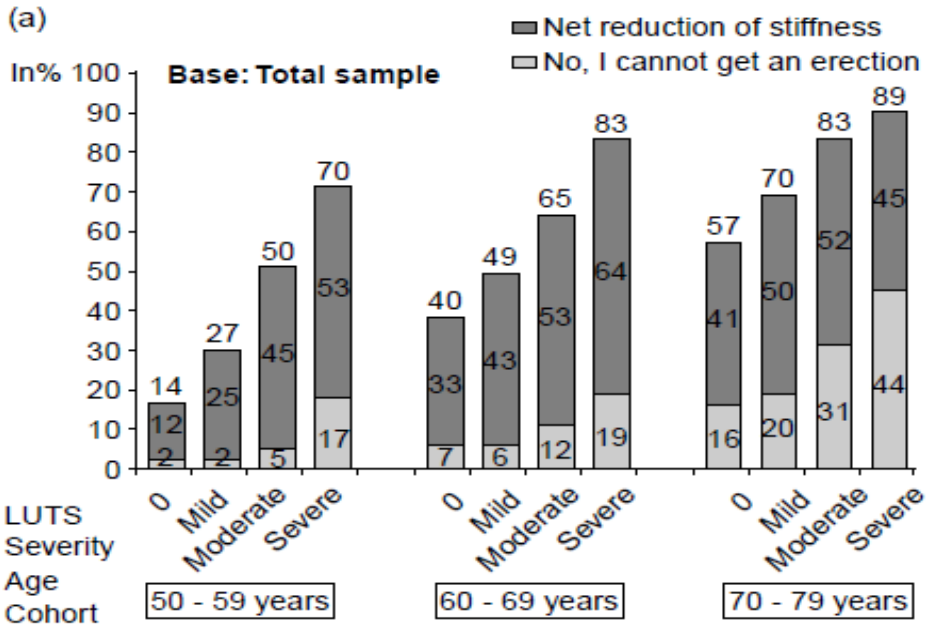
the recently added Male Sexual Function Scale (Rosen R)[43]

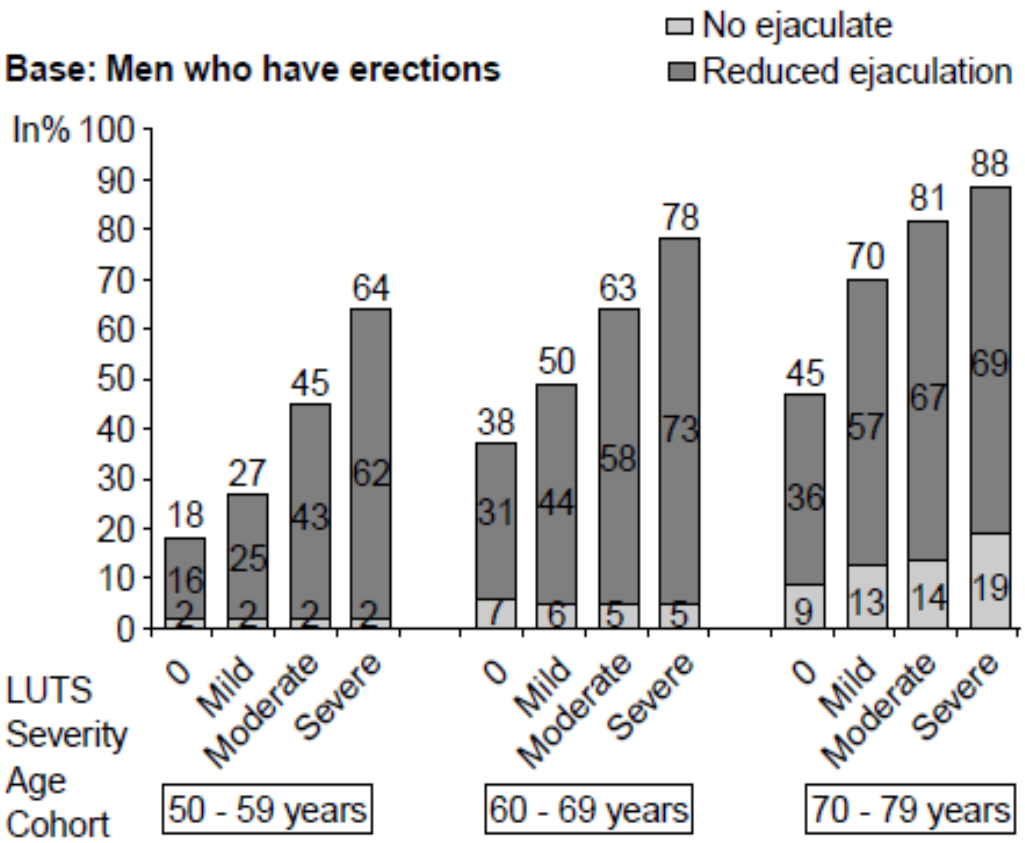
The Male Sexual Function Scale which was formulated in consultation with the Second International Consultation on Sexual Dysfunction is based on qualitative research in normal and sexually dysfunctional men. The scale evaluates and grades the main components of male sexual function (desire, erection, ejaculation, satisfaction) in both research and clinical settings. An independent advisory board of experts in male sexuality designed the scale

without involvement or funding from any industry. This novel screening tool is ideal for use in both primary care and urology practice settings and may also be valuable in screening patients for sexual dysfunction after pelvic surgery or with chronic illness or medications .

Eventhough the major drawback of these sexual questionnaires was over reliance on self assessment, these have been put to use in various clinical studies around the world. So they are here to stay for the assessment of the sexual function till an effective alternative is found out.

One such finding about erectile dysfunction and ejaculatory dysfunction is illustrated in the diagrams below:





Treating patients with BPH/LUTS and sexual dysfunction:

Alpha 1 blockers:

Since medical treatment for LUTS AND BPH is indicated in older men with multiple co morbidities, it is essential to choose one with minimal side effects .As doxazosin , prazosin and terazosin[44] are associated with significant vasodilatory effects resulting in orthostatic hypotension and dizziness, they are less well tolerated. To improve the risk –to- benefit ratio of α-adrenergic blockers used to treat LUTS associated with BPH , proportionally greater drug

absorption , binding , affinity or exposure time at urinary tract sites compared with vascular sites is desirable.

Combination therapy for treating LUTS and Sexual dysfunction:

Currently, only a few studies have analysed the combination[46] of an α1-adrenergic blocker with a PDE-5 inhibitor and come out with different reports about the effects of these drugs.

MATERIALS AND METHODS

MATERIALS & METHODS

Study Group: All patients who attended Urology outpatient department or admitted in Government Kilpauk Medical College and Hospital and Government Royapettah hospital for symptoms of BPH were enrolled for the study. These patients were admitted for either evaluation or intervention for LUTS/ BPH.

Study design: Prospective clinical study

Study period: 1 year (October 2013 to October 2014)

Materials:

All male patients above the age of 50 yrs who presented with LUTS symptoms were investigated further and diagnosed as BPH.

- Informed consent obtained from all eligible patients.
- All patients after admission were given the linguistic version of IPSS & MSHQ
- Pts who are literate were asked to fill up the questionnaire. (Self
- Administered questionnaire)
- Pts who were not able to fill up (for various reasons like illiterate, poor eye sight, not able to understand the contents) were interviewed personally.
- To avoid interviewer bias, the same interviewer interviewed all pts.

- All details regarding the pts demographics, scoring, results will be entered into a proforma
- Post treatment effect evaluation was done at the end of 3 months following treatment.

Initial evaluation:

The patients with complaints suggestive of LUTS/ BPH were thoroughly evaluated with History & Physical examination,

DRE & Focused neurological examination,

Baseline blood parameters,

USG KUB, Uroflow & PVR.

Inclusion criteria

1. All patients with history suggestive of LUTS/BPH with more than 50 years were included.
2. Patients who gave informed consent for the study were included.

Exclusion criteria

After the initial evaluation the patients were excluded using the following exclusion criteria.

1. Patients who have been already treated for LUTS / BPH earlier.
2. Patients with co-morbid illness like DM & HT.
3. Patients with history or clinical examination suggestive of associated neurological disorder.

4. Patients who were not willing to self-administer the questionnaire or to be interviewed.

Symptom severity & Sexual function assessment:

All the patients were given with the linguistic version of the International - Prostate Symptom Score (I - PSS) to assess the severity of LUTS. IPSS consists of Seven factors which can be divided into,

- Storage symptoms
  - Frequency
  - Urgency
  - Nocturia
- Voiding Symptoms
  - Weak stream
  - Intermittency
  - Weak stream
  - Incomplete emptying

The IPSS score can be applied to quantify the bothersome level of these symptoms in any pathologic condition that produces these symptoms. Based on this, we used this IPSS score for our patients presenting with LUTS and diagnosed as BPH. The main advantage of this score is its ease in use.

IPSS

Patient Name: _____ Date: _____

(Circle one number for each question and then add to scoring line for total)	Not at All	Less Than 1 Time in 5	Less Than Half the Time	About Half the Time	More Than Half the Time	Almost Always	Your Score
Incomplete emptying: Over the past month, how often have you had a sensation of not emptying your bladder completely after you finished urinating?	0	1	2	3	4	5	
Frequency: Over the past month, how often have you had to urinate again less than 2 hours after you finished urinating?	0	1	2	3	4	5	
Intermittency: Over the past month, how often have you found that you stopped and started again several times when you urinated?	0	1	2	3	4	5	
Urgency: Over the past month, how often have you found it difficult to postpone urination?	0	1	2	3	4	5	
Weak-stream: Over the past month, how often have you had a weak urinary stream?	0	1	2	3	4	5	
Straining: Over the past month, how often have you had to push or strain to begin urination?	0	1	2	3	4	5	
	Never	1 Time	2 Times	3 Times	4 Times	5 or More	
Nocturia: Over the past month, how many times per night did you typically get up to urinate?	0	1	2	3	4	5	
Add up your individual scores for your total AUA Symptom Score =							

Symptom Score Severity Rating: 1-7 (Mild) 8-19 (Moderate) 20-35 (Severe)

Sexual function assessment was done using linguistic version of the Male sexual Function Scale. The Male Sexual Function Scale consists a total of 8 questions of which two questions are on erectile function domain & its bother and three are on ejaculatory function domain & its bother, one question each on sexual desire and satisfaction. The final question assessed the overall bother or distraction of life due to the sexual dysfunction. The linguistic conversion was

done by the investigator with the help of a Psychologist who had experience in interviewing such type of patients. At most care was taken in phrasing the words so that it should not be embarrassing to the patient.

Before putting into use in this clinical study, the questionnaire was circulated among out patients who were waiting for ultrasound examination. They were asked to comment on the content whether it is understandable or not, and their suggestions were taken.

The investigator interviewed patients (76 patients who are illiterate and who could not read the questionnaire because of poor eyesight and who could not understand the content. To avoid bias, the same investigator interviewed all such patients. In all other patients (44 patients) it was used as a self-administered questionnaire (SAQ).

Management:

Management of these patients was done according our department protocol. Management consisted of medical therapy in the form of α- blockers and 5AR Inhibitors. Surgical therapy was mainly Transurethral resection of prostate (TURP).

Post treatment evaluation:

Evaluation following treatment was done at the end 3rd month. All patients were asked to come for follow-up at the end of 3rd month and were

given the I-PSS & Male sexual function scale questionnaires. Uroflow with post void residue was also done to ascertain the effect of therapy.

Correlation between LUTS & Sexual dysfunction:

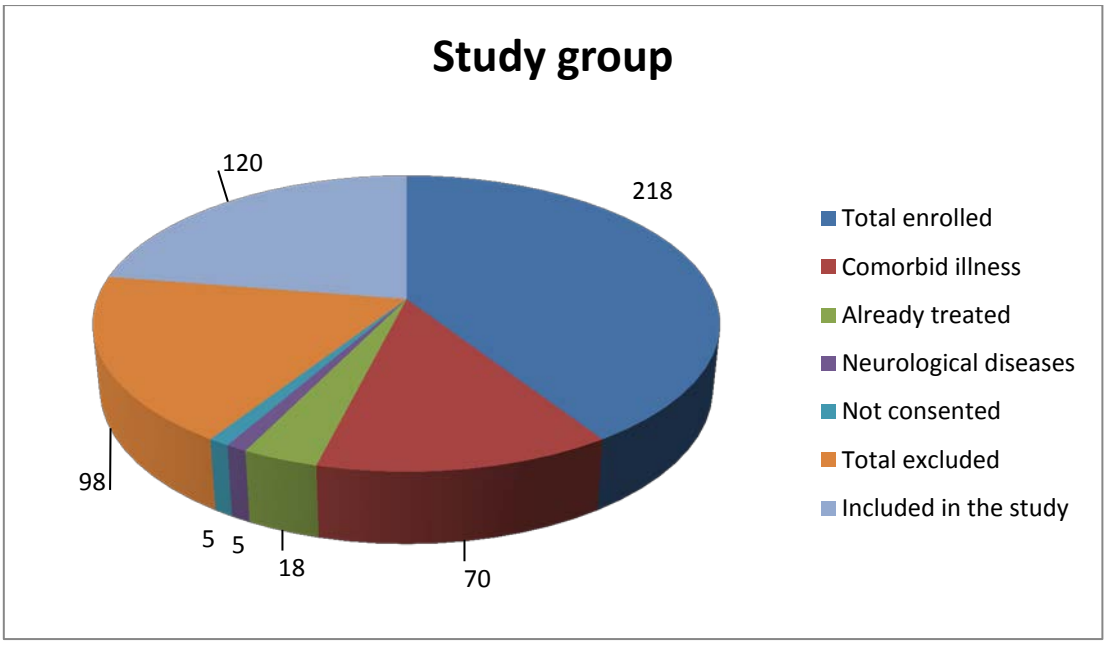
Correlation between LUTS severity and sexual function severity was assessed using Microsoft Excel correlation coefficient.

OBSERVATION AND RESULTS

OBSERVATION AND RESULTS

All the patients who attended our department OP or admitted in our hospital for either the investigation or treatment of BPH and the symptoms during the time period between October 2013 to October 2014 were enrolled for the study. Diagnosis was confirmed with investigations. After initial evaluation, 98 patients were excluded from the study as per exclusion criteria adopted for the study.

Total enrolled	**218**
Co morbid illness (DM/HTN)	70
Already treated	18
Neurological diseases	05
Not consented	05
Total Excluded	98
Included in the study	120

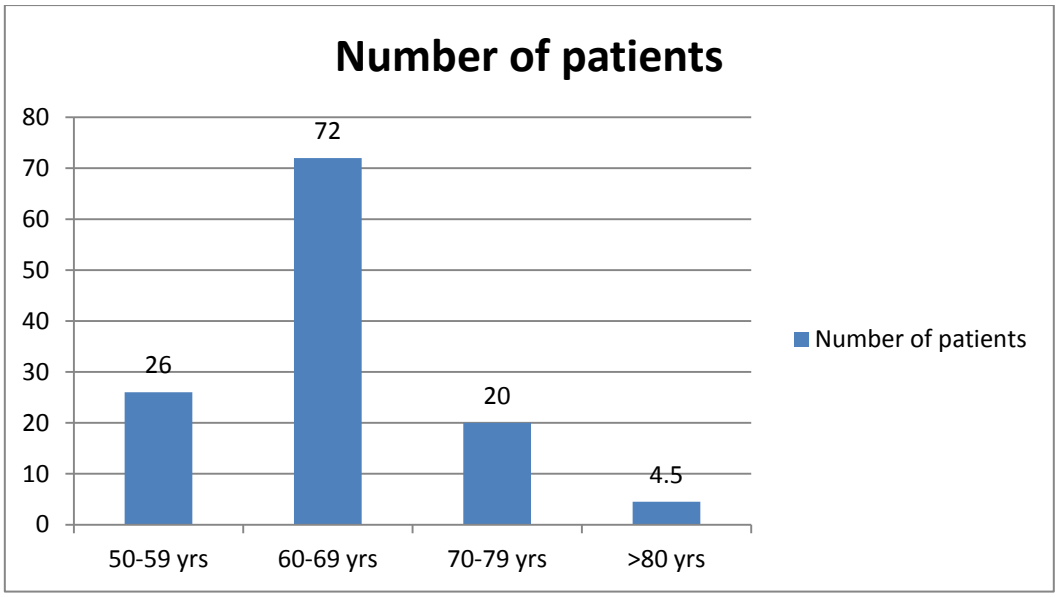


The major cause for exclusion was associated comorbid illness mainly diabetes and hypertension. Finally 120 patients were included in the study.

Age Stratification:

Age group	No	%
50 -59	26	21.67
60-69	72	60
70-79	20	16.67
>80	2	1.67

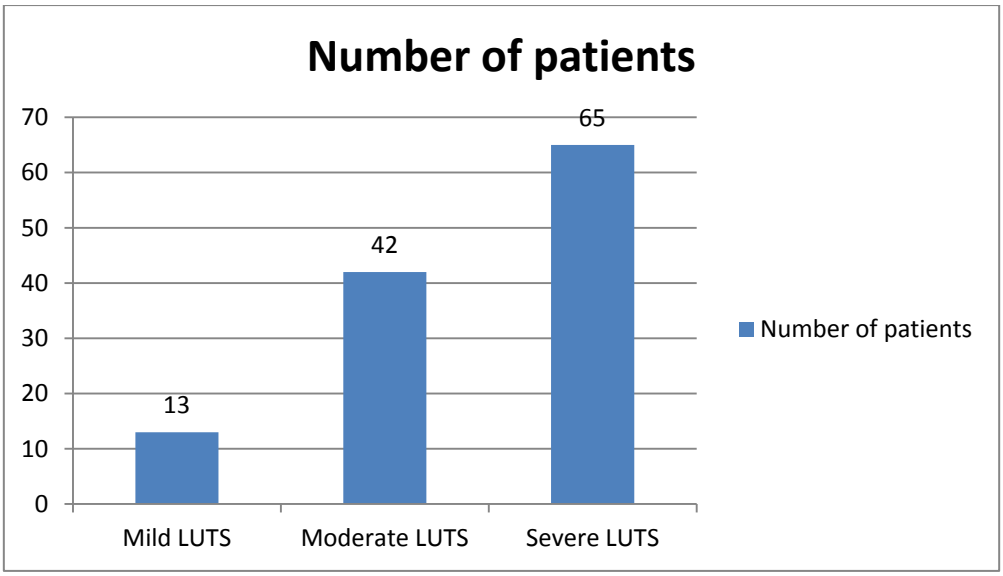
Majority of the symptomatic patients included in the study were in the age group between 60- 69 yrs. (60%).



LUTS Severity stratification:

LUTS severity	**No**	**%**
Mild	13	10.83
Moderate	42	35
Severe	65	54.17

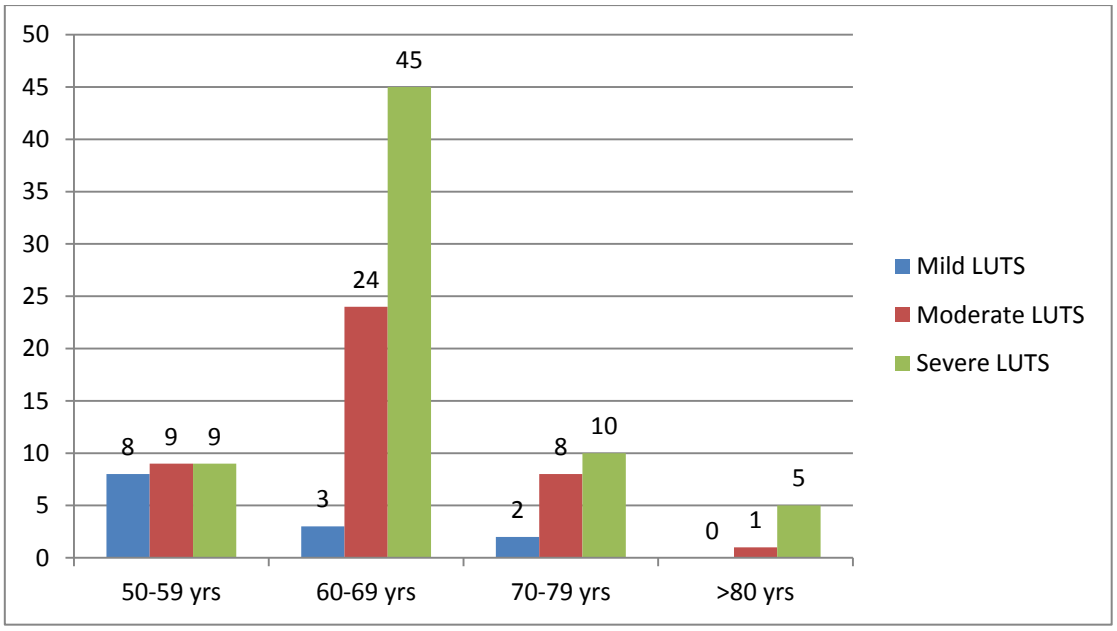
Most of the patients in the study (65, 54.17%) had severe bothersome symptoms.



Age group wise LUTS severity:

	Mild	**Moderate**	**Severe**	**Total**
50-59	8	9	9	26
60-69	3	24	45	72
70-79	2	8	10	20
>80	0	1	1	2
Total	13	42	65	120

Most of the patients in the different age groups had bothersome moderate to severe symptoms. 95.83% (69 patients) in the age group of 60-69 had moderate to severe symptoms.



There exists a statistical significance regarding LUTS and age stratification. Moderate LUTS was significantly more in 60-69 age group (57.1%) than any other group. Also sever LUTS was also more in the same age group (69.2 %).

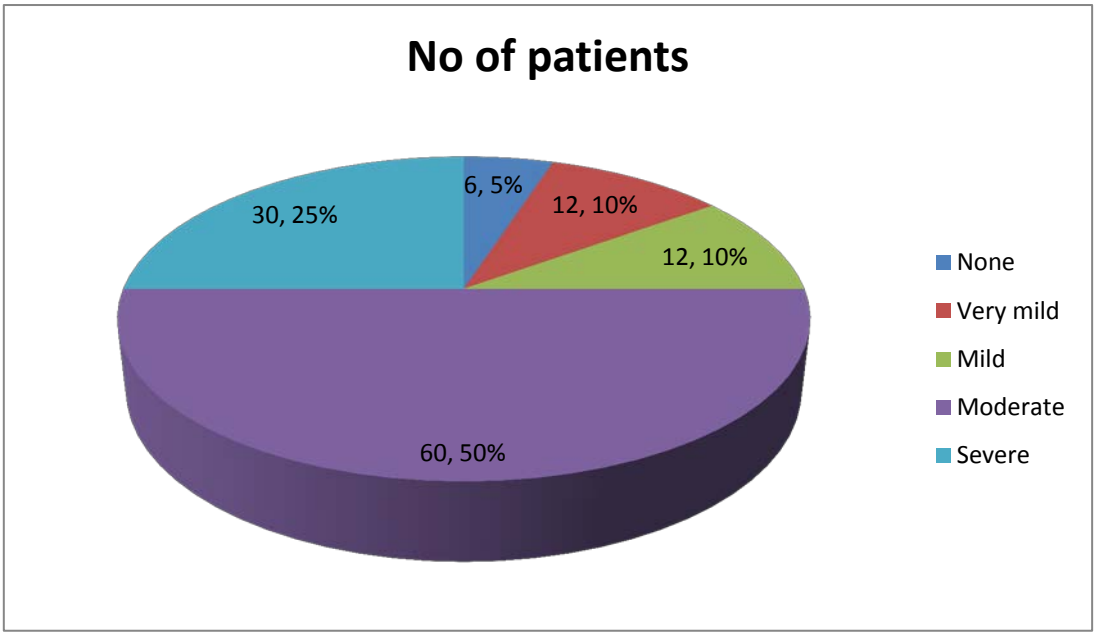
Chi square studies showed an association of 15.88. Andd there was a significant P value 0f 0.014.

Chi square	15.88
Pvalue	0.014

Prevalence of Sexual dysfunction:

Erectile dysfunction:

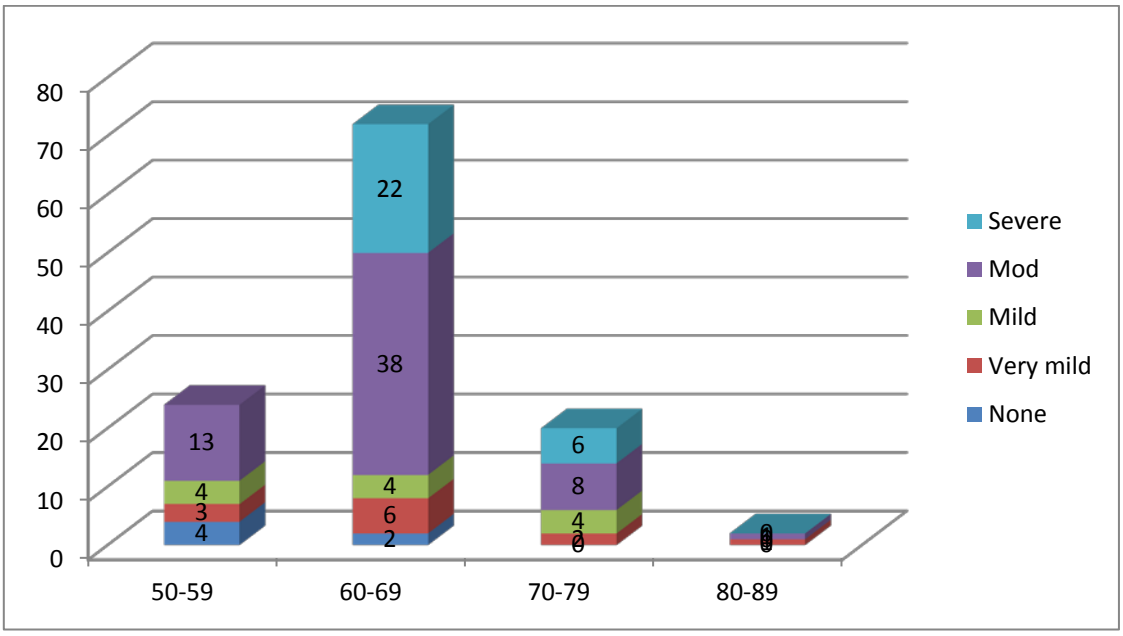
	No	%
None	6	5
Very mild	12	10
Mild	12	10
Moderate	60	50
Severe	30	25
Total	**120**	**100**



Most of the patients (50%) had moderate bother due to their Erectile dysfunction. 25 % had severe bother while the rest had none or mild bother erectile dysfunction.

Age group stratification –Erectile dysfunction:

	None	Very mild	Mild	Mod	Severe	Total
50-59	4	3	4	13	2	26
60-69	2	6	4	38	22	72
70-79	0	2	4	8	6	20
>80	0	1	0	1	0	2
	6	**12**	**12**	**60**	**30**	**120**

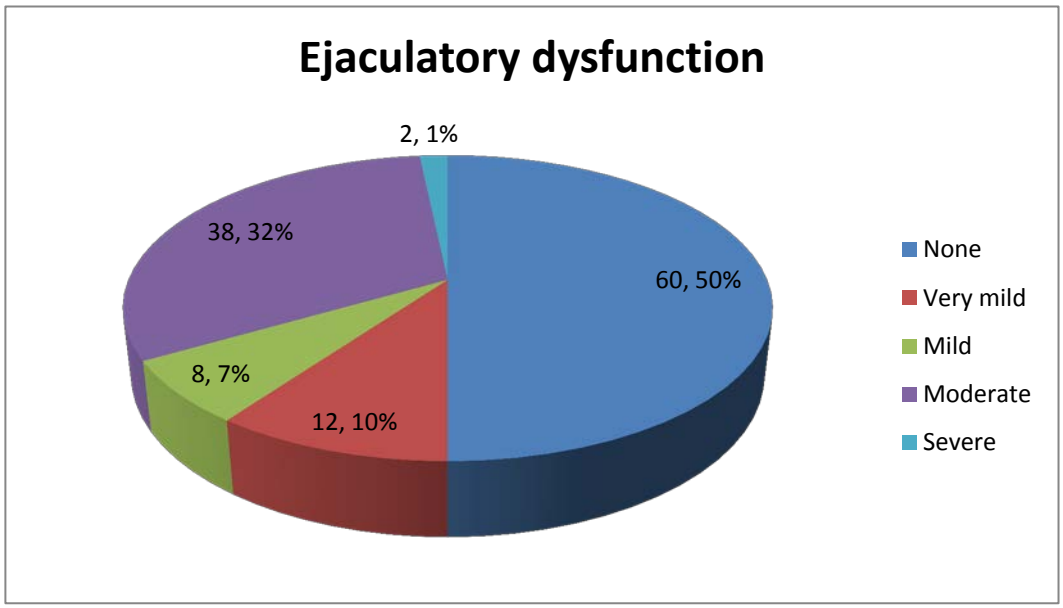


60 out of 72 patients (83.3%)in the age group of 60-69 had moderate to severe bother erectile dysfunction.. Only 15 out of 26 patients (57%) in age group of 50-59 and 14 out of 20 (70%) in age group of 70-79 had moderate to severe bother.

Chi square	20.47
P value	0.058

Ejaculatory dysfunction:

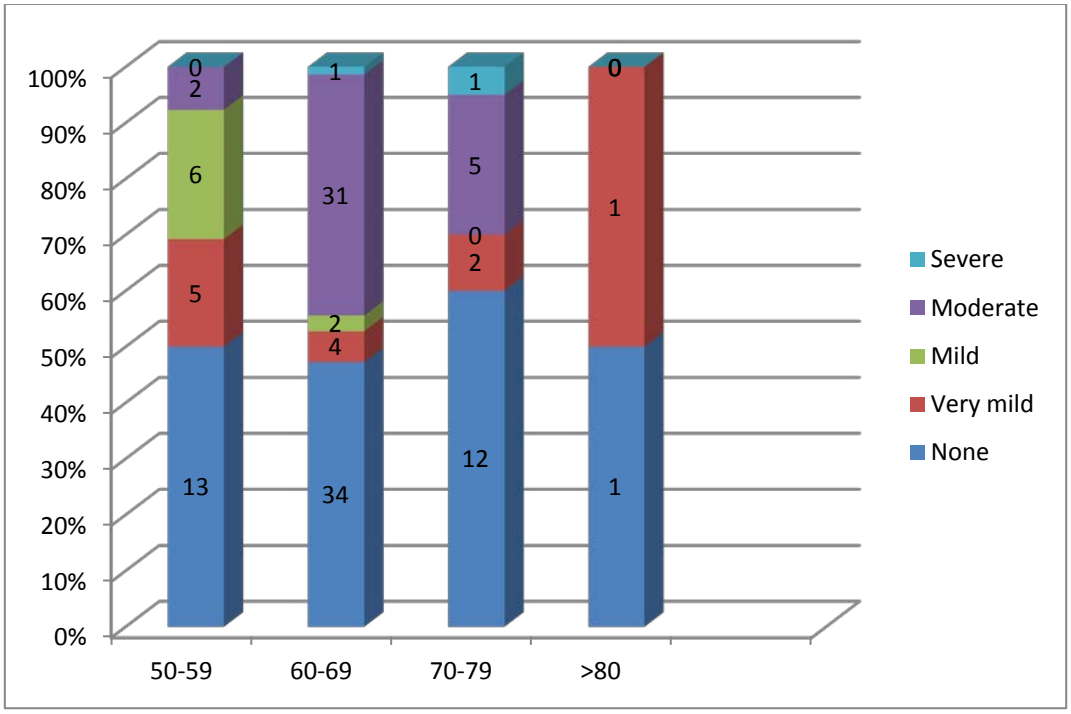
	No	**%**
None	60	50
Very mild	12	10
Mild	8	6.67
Moderate	38	31.67
Severe	2	1.67
	120	**100 %**



Majority had only none or mild bother. (67%). Only 2 were severely bothered.

Age group stratification –Ejaculatory dysfunction:

	None	Very mild	Mild	Moderate	Severe	
50-59	13	5	6	2	0	26
60-69	34	4	2	31	1	72
70-79	12	2	0	5	1	20
>80	1	1	0	0	0	2
	60	12	8	38	2	120



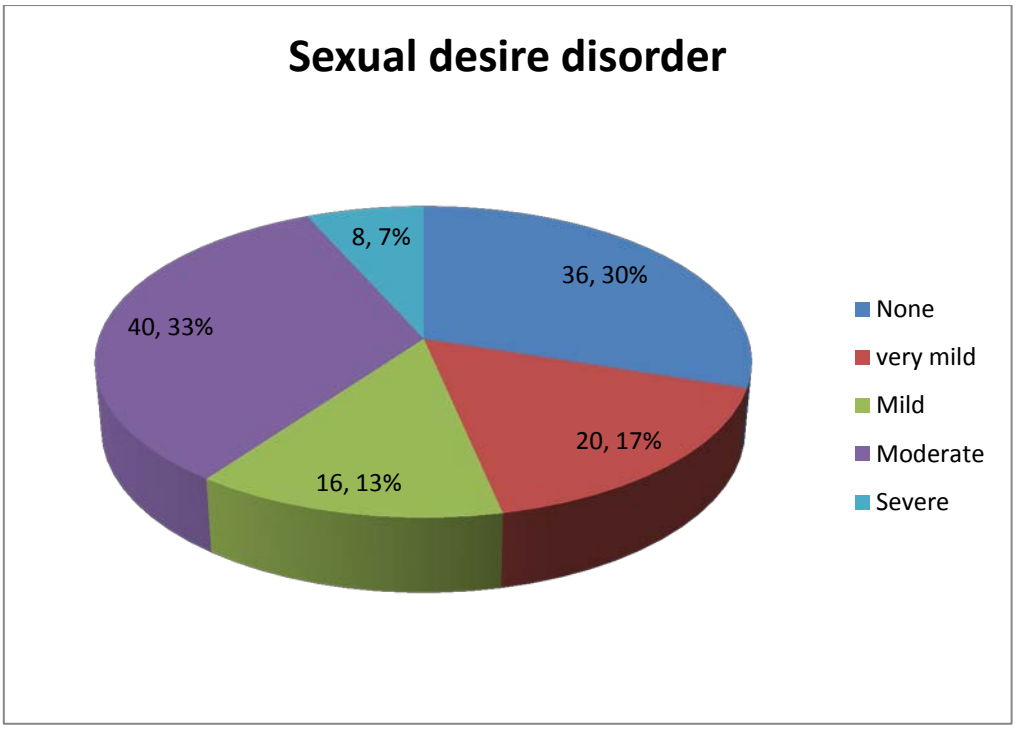
75% patients in the age group 50-59 had mild ejaculatory dysfunction. But 81.6% of patients in the age group of 60-69 years had moderate dysfunction. Majority in the age groups 70-79 and more than 80 age groups had mild dysfunction only.

Chi square	31.37
P value	0.001

There was a Significant P value for this factor in the study P 0.001 which was comparable to other studies.

Sexual desire disorder:

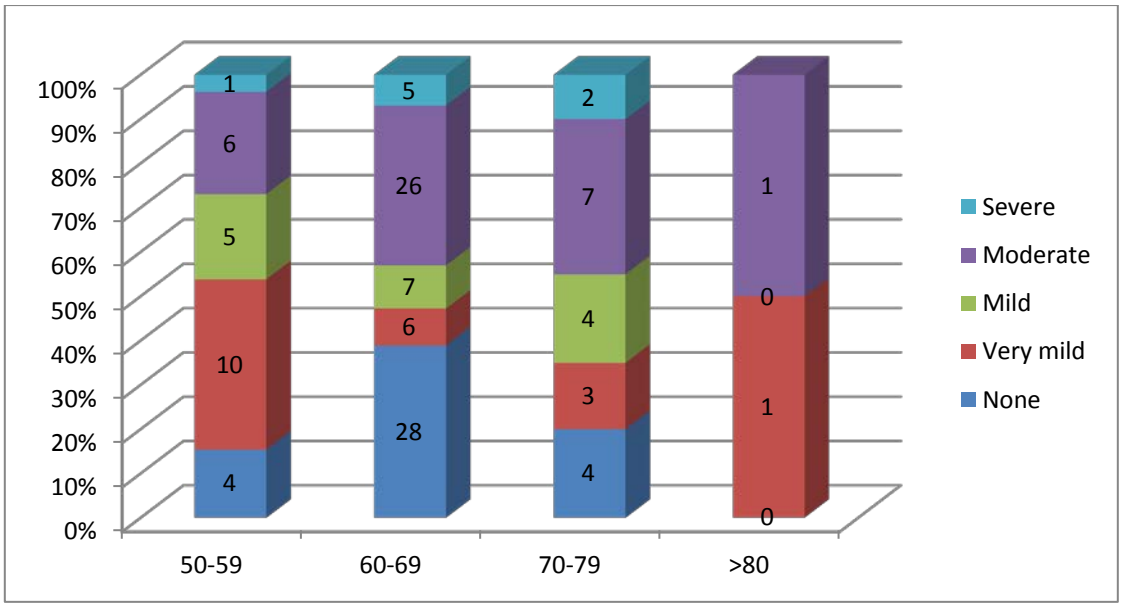
	No	**%**
None	36	30
Very mild	20	16.67
Mild	16	13.33
Moderate	40	33.33
Severe	8	6.67
	120	100%



Majority of patients (60%) were not bothered or mildly bothered. Only 8 patients (6.67%) were severly bothered by their sexual desire disorder.

Age group stratification –Sexual desire disorder:

	None	Very mild	Mild	Moderate	Severe	
50-59	4	10	5	6	1	26
60-69	28	6	7	26	5	72
70-79	4	3	4	7	2	20
>80	0	1	0	1	0	2
	36	20	16	40	8	120



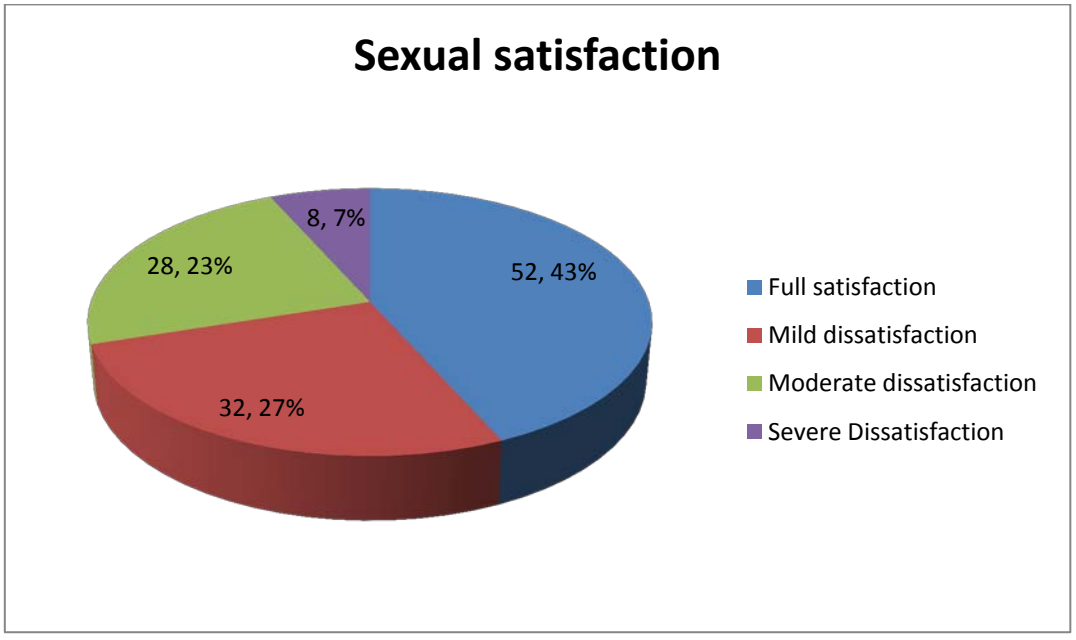
Sexual desire was affected more in the active sexual group of 50-59 years. Only 15.4% in that group did not have any change in their sexual desire. 38.9% in 60-69 age group did not have any changr in sexual desire.Buy around 35% in 70-79 had moderate decrease in their sexual desire.

Chi square	21.06
P value	0.049

Sexual Satisfaction :

	No	%
Full satisfaction	52	43.33
Mild dissatisfaction	32	26.67
Moderate dissatisfaction	28	23.33
Total dissatisfaction	8	6.67
	120	**100%**

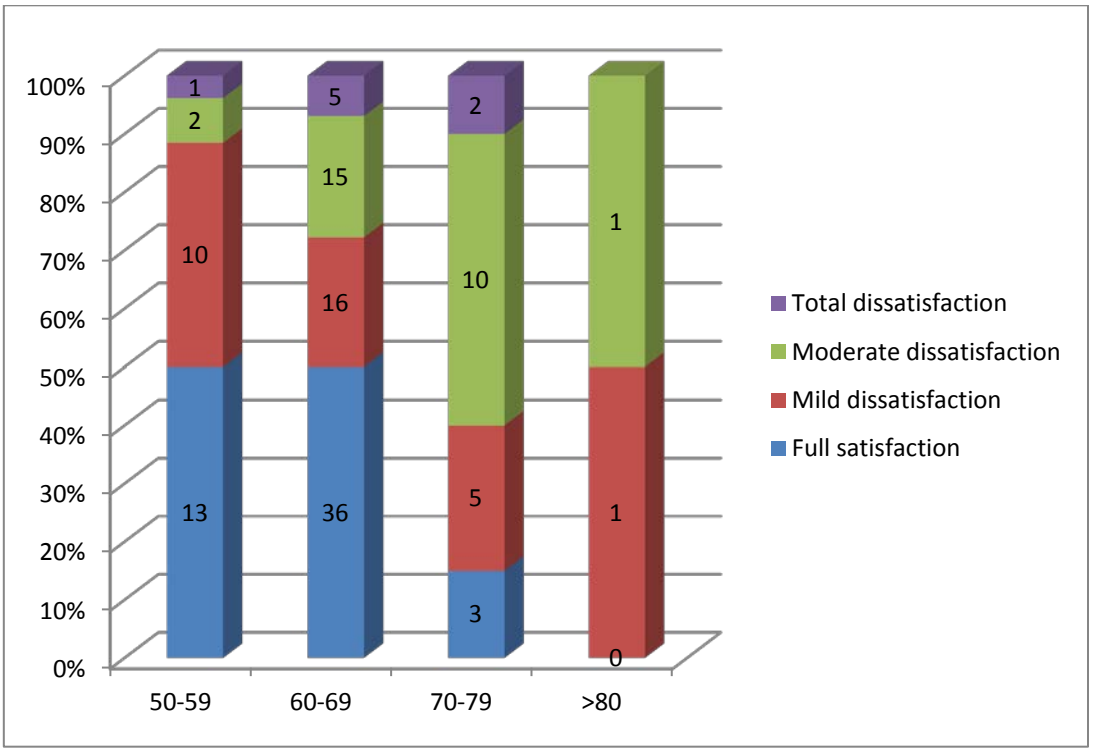
Among 120 patients, 52 (43.3%) were fully satisfied with their sexual activities. Around 30 % were either moderately dissatisfied or totally dissatisfied.



Age stratification of Sexual satisfaction:

	Full satisfaction	Mild dissat	Moderate dissat	Total dissat	
50-59	13	10	2	1	26
60-69	36	16	15	5	72
70-79	3	5	10	2	20
>80	0	1	1	0	2
	52	**32**	**28**	**8**	**120**

52 patients among the study group had full satisfaction in their sexual life. Only in the 70-79 age group did more patients have more dissatisfaction.



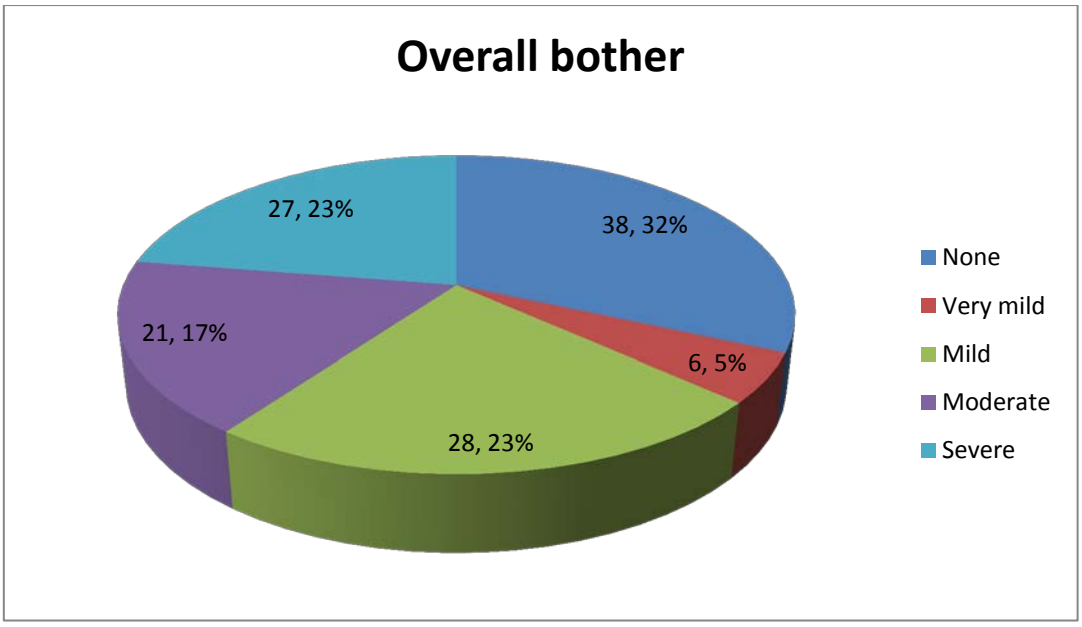
Mild and moderate sexual dissatisfaction was more in the 60-69 age group (50 % and 53.6& respectively). The same was true in total dissatisfaction. (62.5%)

Chi square	18.3
P value	0.031

The P value for this correlation was 0.031.

Overall Bother/ distraction due to sexual dysfunction:

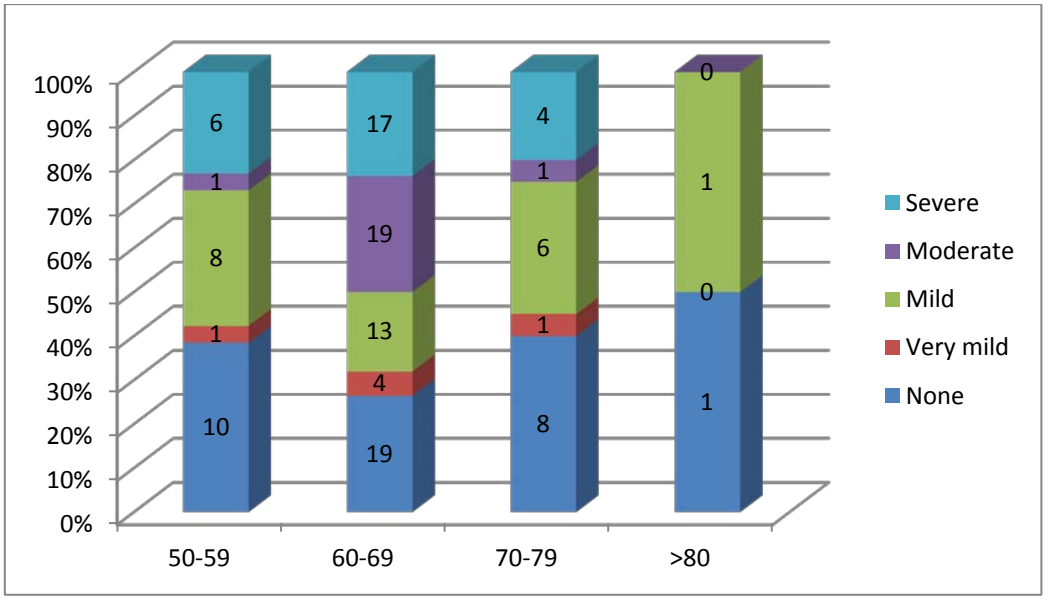
Bother	**No**	**%**
None	38	31.67
Very mild	6	5
Mild	28	23.3
Moderate	21	17.5
Severe	27	22.5
Total	120	100%



Of the 120 patients, 27 (22.5) were very much bothered about sexual dysfunction. 21 patients (17.5%) were moderately bothered. Majority of patients (31.67%) were not at all bothered about their sexual dysfunction.

Age stratification of Overall bother:

	None	Very mild	Mild	Moderate	Severe	
50-59	10	1	8	1	6	26
60-69	19	4	13	19	17	72
70-79	8	1	6	1	4	20
>80	1		1			2
	38	**6**	**28**	**21**	**27**	**120**



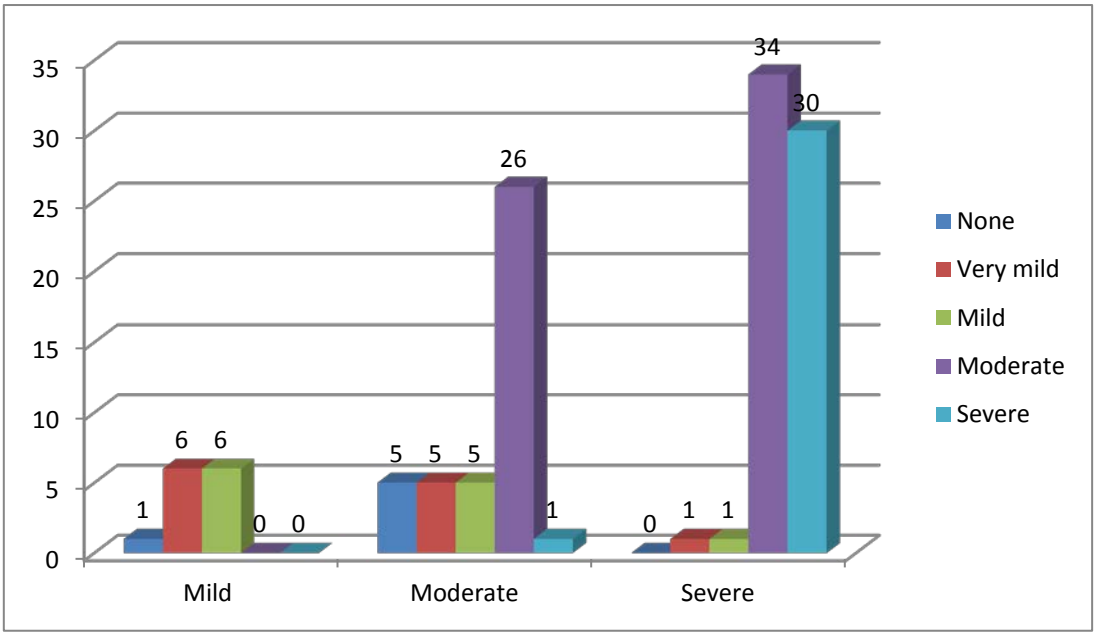
Most of the patients in the different age groups did not have any overall bother. Patients in the age group 60-69 yrs had more number of patients with very mild bother (66.7%).The same age groups had more number of patients with mild, moderate and sever bother (46.4%, 90.5% , and 63% respectively).

Chi square	13.05
P value	0.036

Correlation between LUTS severity and Sexual dysfunction :

LUTS and Erectile dysfunction:

LUTS	None	Very Mild	Mild	Moderate	Severe	Total
Mild	1	6	6	0	0	13
Moderate	5	5	5	26	1	42
Severe	0	1	1	34	29	65
Total	6	12	12	60	30	120



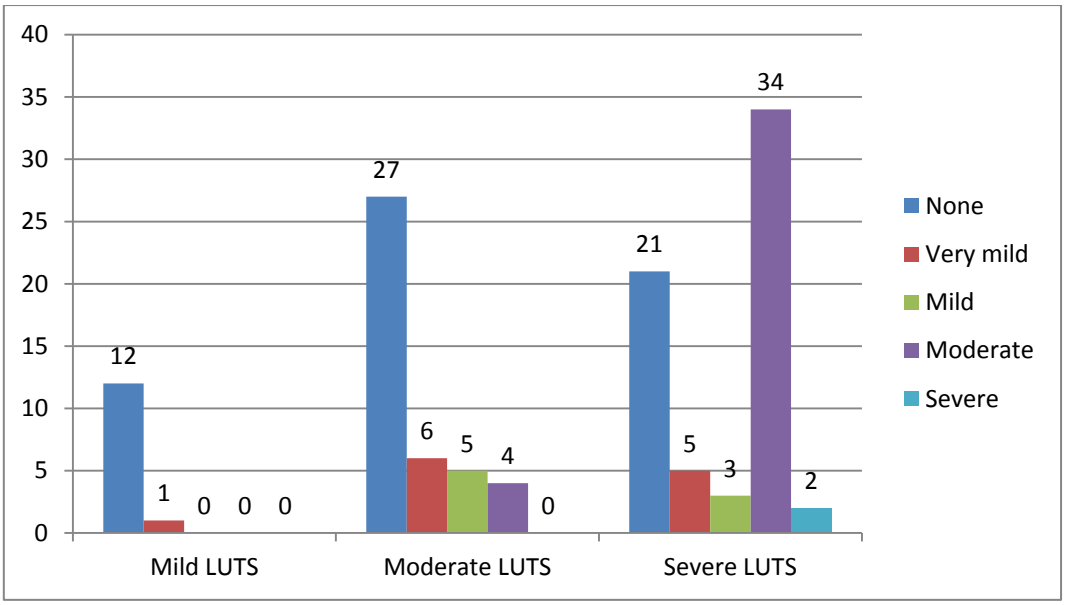
All patients with mild LUTS symptoms had none or mild erectile dysfunction. Almost all of the patients in the severe LUTS group had moderate or severe erectile dysfunction.

Patients with moderate and severe sexual dysfunction was more in the 70-79 age group.(56.7% and 96.7% respectively.) There was a significant P value.

Chi square	80.65
P value	<0.000

LUTS and Ejaculatory dysfunction:

LUTS	**None**	**Very mild**	**Mild**	**Moderate**	**Severe**	**Total**
Mild	12	1	0	0	0	13
Moderate	27	6	5	4	0	42
Severe	21	5	3	34	2	65
Total	60	12	8	38	2	120



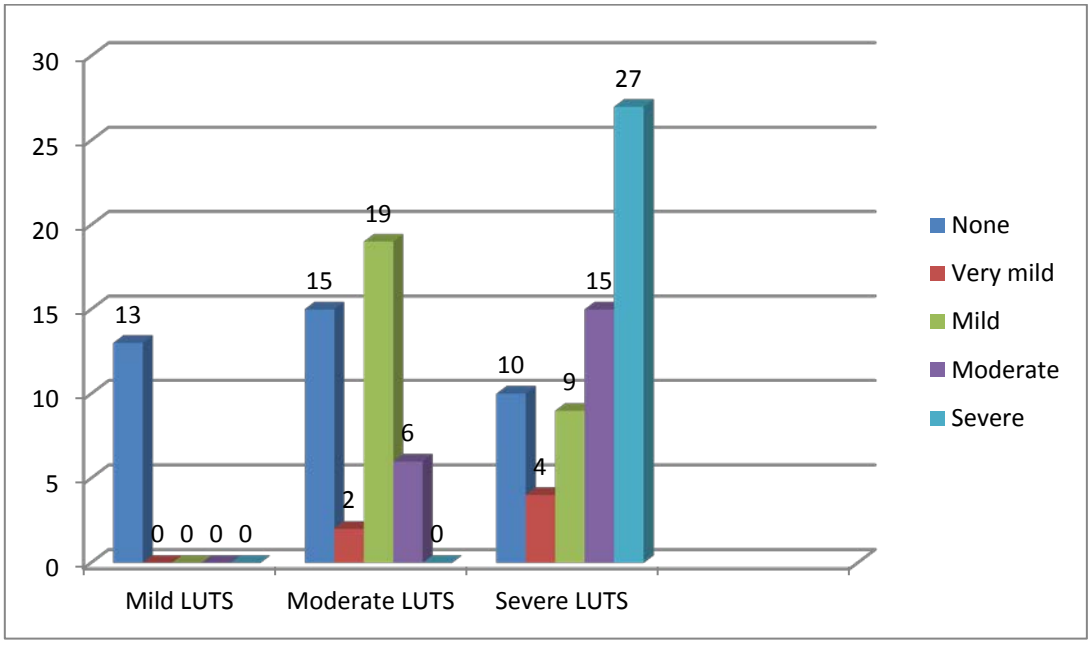
Only patients with severe LUTS had moderate to severe ejaculatory dysfuction (36 out of 65 patients). More Patients in the age group 60-69 yrs had mild ejaculatory dysfunction (62.5%) than any other group. Similarly more number of patients in the 70-79 age group had moderate to severe dysfunction (89.5%) and 100% respectively.

There was a significant P value correlation too.

Chi square	35.69
P value	0.0000

LUTS and Sexual Bother:

LUTS	None	Very mild	Mild	Moderate	Severe	Total
Mild	13	0	0	0	0	13
Moderate	15	2	19	6	0	42
Severe	10	4	9	15	27	65
Total	**38**	**6**	**28**	**21**	**27**	**120**



None of the patients in the mild LUTS group were bothered by sexual dysfunction. Around 45% of patients with moderate LUTS had mild bother.42% of patients with Severe LUTS had severe distress due to sexual dysfunction.

More number of patients in moderate LUTS group had mild sexual bother (67.9%). But patients with severe LUTS had more number of patients with moderate and severe sexual bother .(71.4%) and 100% respectively.

Chi square	66.36
P value	<0.000

Correlations Summary:-

Descriptive Statistics

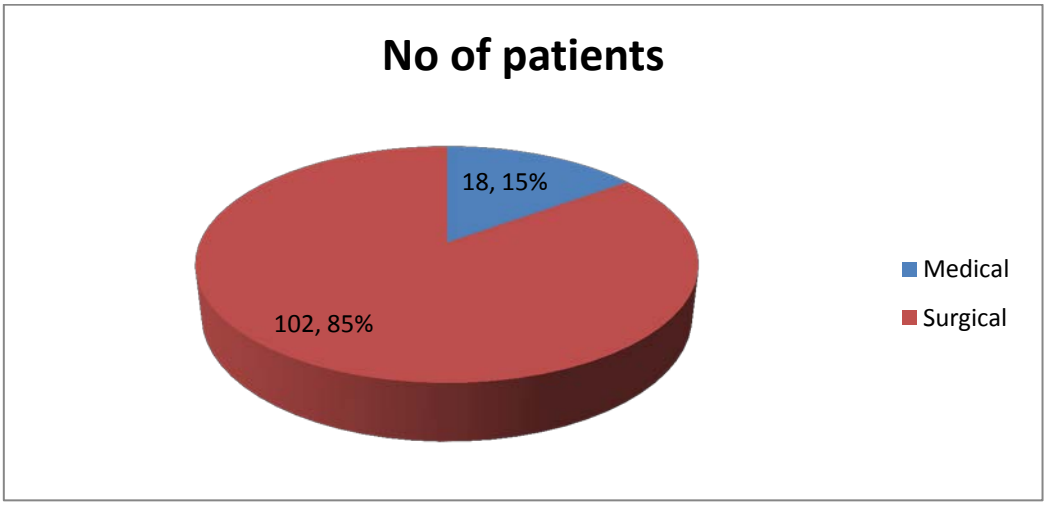
	Mean	**Std. Deviation**	**N**
Age	64.73	7.122	120
LUTS Score	19.65	7.124	120
ED	2.83	1.074	120
EJD	1.25	1.392	120
DESIRE	1.70	1.376	120
SATISFACTION	1.93	.968	120
BOTHER	1.94	1.552	120

		Age	Ed	Ejd	Desire	Satisfaction	Bother
LUTS Score	Pearson Correlation	.265**	.702**	.607**	.648**	.541**	.561**
	Sig. (2-tailed)	.003	.000	.000	.000	.000	.000
	N	120	120	120	120	120	120

The correlation between LUTS and the various manifestations of sexual dysfunction were studied using the Pearson correlation and found to be significant.

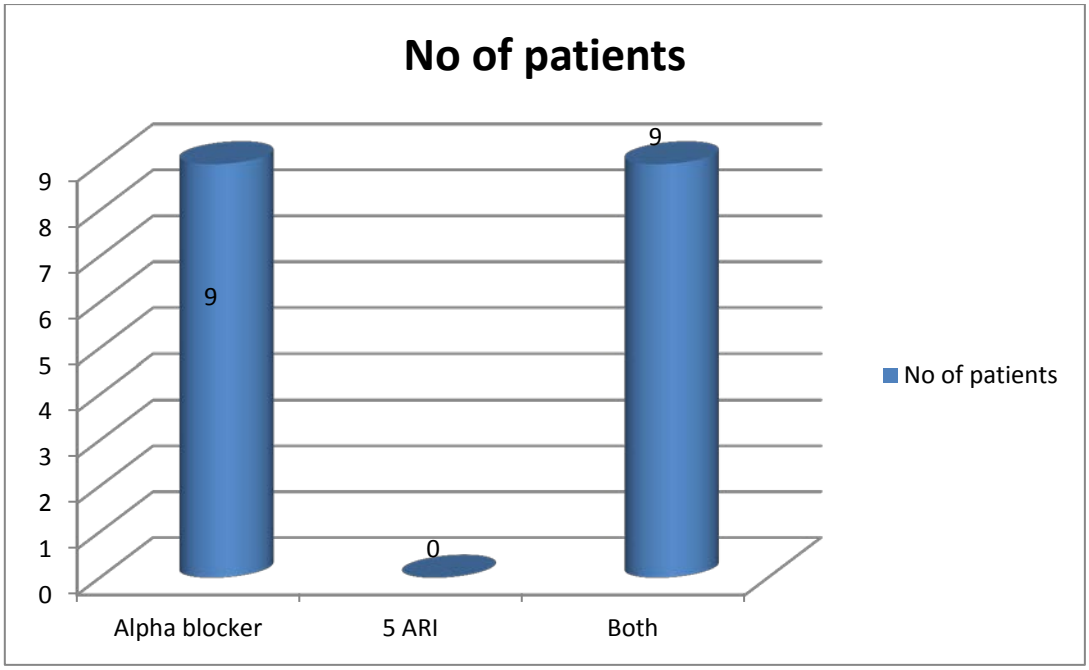
Treatment given:

Treatment	No of patients	%
Medical	18	15
Surgical	102	85
Total	**120**	**100**



Medical treatment:

Drug	No of patients
Alpha blocker	9
5 ARI	0
Both	9
Total	18



Medical treatment- Sexual function assessment:

	Pre – Treatment					Post - Treatment				
	None	**Very mild**	**Mild**	**Mod**	**Sev**	**None**	**Very mild**	**Mild**	**Mod**	**Sev**
Alpha blocker	1	3	5	0	0	1	1	4	3	0
Both	1	2	6	0	0	1	1	2	5	0
Total	**2**	**5**	**11**	**0**	**0**	**2**	**2**	**6**	**8**	**0**

Surgical treatment – TURP-Sexual function assessment:

ED * ED Crosstabulation							
			ED POST TREATMENT				
			0	**1**	**2**	**3**	**Total**
ED	0	Count	2	3	1	0	6
		% of Total	1.7%	2.5%	.8%	.0%	5.0%
	1	Count	0	5	5	1	11
		% of Total	.0%	4.2%	4.2%	.8%	9.2%
	2	Count	0	5	6	1	12
		% of Total	.0%	4.2%	5.0%	.8%	10.0%
	3	Count	0	26	33	1	60
		% of Total	.0%	21.7%	27.5%	.8%	50.0%
	4	Count	0	0	18	13	31
		% of Total	.0%	.0%	15.0%	10.8%	25.8%
		% of Total	1.7%	32.5%	52.5%	13.3%	100.0%

Post treatment, the erectile dysfunction did not worsen in most of the patients. Only in 9.2 % with very mild ED was a worsening of symptoms seen. Similarly, in Mild ED patients only 10% had their symptoms aggravated. Most of the patients in moderate and severe ED group did not have worsening of symptoms.

EJD * EJD Crosstabulation								
			EJD POST TREATMENT					
			0	1	2	3	4	Total
EJD	0	Count	14	4	32	10	0	60
		% of Total	11.7%	3.3%	26.7%	8.3%	.0%	50.0%
	1	Count	1	0	7	4	0	12
		% of Total	.8%	.0%	5.8%	3.3%	.0%	10.0%
	2	Count	1	0	5	2	0	8
		% of Total	.8%	.0%	4.2%	1.7%	.0%	6.7%
	3	Count	0	0	13	17	8	38
		% of Total	.0%	.0%	10.8%	14.2%	6.7%	31.7%
	4	Count	0	0	0	1	1	2
		% of Total	.0%	.0%	.0%	.8%	.8%	1.7%
		% of Total	13.3%	3.3%	47.5%	28.3%	7.5%	100.0%

Ejaculatory dysfunction got worsened in a significant number of patients after TURP as in other studies worldwide. Almost 35 % of patients without EjD before TURP had significant EjD post TURP . The same was seen in patients with mild and moderate EjD also.

Paired Samples Statistics						
		Mean	**N**	**Std. Deviation**	**Std. Error Mean**	**P**
Pair 1	ED	2.83	120	1.074	.098	0.0000
	ED POST	1.78	108	.692	.063	
Pair 2	EJD	1.25	120	1.392	.127	0.0000
	EJD POST	2.13	108	1.069	.098	

In conclusion , Ejaculatory function was significantly affected after TURP than erectile function in our study which was the same trend seen in other studies worldwide.

ANALYSIS AND DISCUSSION

ANALYSIS AND DISCUSSION

Older men presenting with both LUTS and sexual dysfunction constitute a significant proportion of the male population worldwide. MSAM-7 study illustrated that there is progressive increase in LUTS and sexual dysfunction with age and independent increase in sexual dysfunction in patients with LUTS which was also seen in our study group..

Out of a total of 218 patients who were enrolled into the study, 120 were finally included in the study after applying the inclusion and exclusion criteria. Though the sample size appears low, the patient group included both the outpatient and hospitalized patients that form those who are very much distressed with the symptoms. Moreover the sample size is comparable with that of Namasivayam (et al). Patients with co-morbidities were excluded from the study. They formed around one third of the patients (34%). It is important to note that around 2-3 % of patients refused to respond to sexual health questionnaire, which carries significance.

The predominant age group is 60 – 69 yrs (60%). This age characteristic is comparable to the studies in the literature. The elderly age may be significant, because age as such can have a bearing on sexual dysfunction as revealed in the Cologne Male Survey.

More than half of the patients had severe LUTS (around 55%). This may be due to the patient sample selected. The LUTS symptoms also had age wise

variation, with 65.38 % of those in the 50 – 59 age group with mild to moderate symptoms, and most of them in the 60-69 group with severe symptoms (62.5 %). This signifies increase in prevalence with age.

The sexual function too showed variation among different age groups. Both the factors, the erectile dysfunction and ejaculatory dysfunction were more common in the age group of 60 – 69, compared to other age groups. Only the patients in the age group 60 -69 were significantly bothered by sexual dysfunction. This may be due to the association of sexual dysfunction with increasing age. Moreover patients after the age of 70 years may not consider their sexual dysfunction bothersome, though they have a high prevalence.

None of the patients in the mild LUTS group had moderate or severe ED whereas nearly all in the severe group and 88 % in the moderate LUTS group had significant ED. The increasing age is associated with both increase in LUTS and ED. This correlates well with the reports of the MSAM –7. The correlation coefficient for LUTS with ED is 0.702, which is highly significant. It is similar to the world literature.

The ejaculatory function was not that frequently affected By LUTS compared with ED. 50 % of patients had no effect on their ejaculatory function regardless of their LUTS status. Whereas, in those affected, more than 60 % belonged to the moderate to severe LUTS group. This shows that though severe LUTS may not always associated with ejaculatory dysfunction, the presence of ejaculatory dysfunction signifies a higher LUTS status. These results correlate

well with the various studies which show a prevalence of 70 –80 % sexual dysfunction with LUTS. The correlation coefficient is 0.607, signifying effective positive correlation.

The degree to which the patients are bothered by their sexual dysfunction also varies well with LUTS. Almost all the patients who had severe bother due to sexual dysfunction had associated severe LUTS. None of them had mild LUTS. 31.66 % of the patients with LUTS had no bothersome sexual dysfunction. This includes patients in the higher age group strata who may have significant dysfunction, but may not be bothered by it. Around 78 % of patients with severe LUTS had bothersome sexual dysfunction.

This bears evidence to the fact that sexual dysfunction increases with increasing LUTS. The MSAM –7 showed that the incidence of bothersome sexual dysfunction associated with LUTS. The correlation coefficient is 0.561, which shows that as LUTS increases, so too sexual dysfunction hand in hand requiring simultaneous effective management.

In the Government institutional set up, with predominantly poor patients, the standard medical management could not be given to the majority of the patients as they cannot afford it. So around 90% of the patients were taken up for TURP. Another problem with our patients is the poor compliance and lack of follow up. But we were able to follow 108 cases over three months through proper communication.

In the post treatment evaluation after medical therapy, the ejaculatory function decreased in around 36% of the patients. This can be expected because retrograde ejaculation is one of the commonest adverse effect as associated with alpha blockers. There was no change in the erectile function after medical therapy.

Out of the patients who came for follow up after TURP, 20% of patients in the moderate ED progressed to severe ED. This may be due to the thermal injury to cavernosal nerves caused by TURP. 70% of the patients developed ejaculatory dysfunction post operatively. This is also well explained in the literature.

To conclude, sexual dysfunction is highly prevalent in the patients with LUTS in the range of 70%. As we do not have a control group we were unable to signify the influence of age. The severity of LUTS also correlated with severity of sexual dysfunction. The treatment outcome is not promising as the patients' ejaculatory dysfunction increased with both surgery and medical management. Though the sample size is small and the follow up is limited, we can suggest that treatment of sexual function should be combined with management of sexual dysfunction for better patient satisfaction.

CONCLUSION

CONCLUSION

- The prevalence of sexual dysfunction in patients with LUTS is 70%.

- The severity of sexual dysfunction correlates with severity of LUTS.

- Ejaculatory function deteriorates after treatment of LUTS/BPH.

Future directions:

- All LUTS patients must be examined and investigated for sexual dysfunction.

- Treatment of sexual dysfunction should be combined with LUTS management for better patient satisfaction and quality of life.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Lowe et al. Treatment of lower urinary tract symptoms suggestive of benign prostatic hyperplasia: sexual function BJU Int 2005 Jun;95 Suppl 4:12-8.
2. Barry MJ, Fowler FJ, O' Leary MP et al; the American Urological association's symptom index for BPH. J Urol 1992;148;1549-57.
3. Barry MJ, Williford WO, et al; BPH specific health status measures in clinical research. J Urol 1995;154;1770-74.
4. McVary KT, Razzaq A, Lee C, Venegas MF, Rademaker A, McKenna KE. Growth of the rat prostate gland is facilitated by the autonomic nervous system. Biol Reprod 1994; 51: 99– 107.
5. Feldman HA, Goldstein I, Hatzichristou DG, Krane RJ, McKinlay JB. Impotence and its medical and psychosocial correlates; results of the Massachusetts Male Aging Study. J. Urol. 1994; 151(1): 54-61.
6. Braun M, Wassmer G, Klotz, T, Reifenrath B, Mathers M, Engelmann U. Epidemiology of erectile dysfunction: results of the `Cologne Male Survey'. Int J. Import Res. 2000; 12(6): 537-44.
7. Multinational survey of the Aging Male (MSAM-7). Presented at the Annual Meeting of the American Urological Association; May 26, 2002 Orlando, Fla.

8. Barry MJ, Cockett AT, Holtgrewe HL, McConnell JD, Sihelnik SA, Winfield HN. Relationship of symptoms of prostatism to commonly used physiological and anatomical measures of the severity of benign prostatic hyperplasia. J Urol 1993;150:351–8.

9. Bosch JL, Kranse R, van Mastrigt R, Schroder FH. Reasons for the weak correlation between prostate volume and urethral resistance parameters in patients with prostatism. J Urol 1995;153:689–93.

10. Anderson KE. Alpha-adrenoceptors and benign prostatic hyperplasia: basic principles for treatment with alpha-adrenoceptor antagonists. World J Urol 2002;19:390–6.

11. Kester RR, Mooppan UM, Gousse AE, et al. Pharmacological characterization of isolated human prostate. J Urol 2003;170: 1032–8.

12. Burnett AL, Maguire MP, Chamness SL, et al. Characterization and localization of nitric oxide synthase in the human prostate. Urology 1995;45:435–9.

13. Takeda M, Tang R, Shapiro E, Burnett AL, Lepor H. Effects of nitric oxide on human and canine prostates. Urology 1995;45:440–6.

14. Anderson KE, Wagner G. Physiology of penile erection. Physiol Rev 1995;75:191–236.

15. Anderson KE. Erectile physiological and pathophysiological pathways involved in erectile dysfunction. J Urol 2003;170:S6–S13 discussion S13–4.

16. Anderson KE. Pharmacology of penile erection. Pharmacol Rev 2001;53:417–50.

17. Hurt KJ, Musicki B, Palese MA, et al. Akt-dependent phosphorylation of endothelial nitric-oxide synthase mediates penile erection. Proc Natl Acad Sci USA 2002;99:4061–6.

18. Burnett AL, Maguire MP, Chamness SL, et al. Characterization and localization of nitric oxide synthase in the human prostate. Urology 1995;45:435–9.

19. Rees RW, Foxwell NA, Ralph DJ, Kell PD, Moncada S, Cellek S. Y-27632, A Rho-kinase inhibitor, inhibits proliferation and adrenergic contraction of prostatic smooth muscle cells. J Urol 2003; 170: 2517– 22

20. Waldinger MD. The neurobiological approach to premature ejaculation. J Urol 2002;168:2359–67.

21. Waldinger MD, Berendsen HH, Blok BF, Olivier B, Holstege G. Premature ejaculation and serotonergic antidepressants-induced delayed ejaculation: the involvement of the serotonergic system. Behav Brain Res 1998;92:111–8

22. Price DT, Schwinn DA, Lomasney JW, Allen LF, Caron MG, Lefkowitz RJ. Identification, quantification, and localization of mRNA for three distinct alpha 1 adrenergic receptor subtypes in human prostate. J Urol 1993;150:546–51.

23. Walden PD, Gerardi C, Lepor H. Localization and expression of the alpha1A-1, alpha1B and alpha1D-adrenoceptors in hyperplastic and non-hyperplastic human prostate. J Urol 1999;161:635–40.

24. Rudner XL, Berkowitz DE, Booth JV, et al. Subtype specific regulation of human vascular alpha(1)-adrenergic receptors by vessel bed and age. Circulation 1999;100:2336–43.

25. Cai H, Harrison DG. Endothelial dysfunction in cardiovascular diseases: the role of oxidant stress. Circ Res 2000;87:840–4.

26. Barton M, Cosentino F, Brandes RP, Moreau P, Shaw S, Luscher TF. Anatomic heterogeneity of vascular aging: role of nitric oxide and endothelin. Hypertension 1997;30:817–24.

27. Cho JJ, Cadet P, Salamon E, Mantione K, Stefano GB. The nongenomic protective effects of estrogen on the male cardiovascular system: clinical and therapeutic implications in aging men. Med Sci Monit 2003;9:RA63–28.

28. Haas CA, Seftel AD, Razmjouei K, Ganz MB, Hampel N, Ferguson K. Erectile dysfunction in aging: upregulation of endothelial nitric oxide synthase. Urology 1998;51:516–22.

29. Solomon H, Man JW, Jackson G. Erectile dysfunction and the cardiovascular patient: endothelial dysfunction is the common denominator. Heart 2003;89:251–3.

30. Bloch W, Klotz T, Loch C, Schmidt G, Engelmann U, Addicks K. Distribution of nitric oxide synthase implies a regulation of circulation, smooth muscle tone, and secretory function in the human prostate by nitric oxide. Prostate 1997;33:1–8.

31. El-Alfy M, Luu-The V, Huang XF, Berger L, Labrie F, Pelletier G. Localization of type 517 beta-hydroxysteroid dehydrogenase, 3betahydroxysteroid dehydrogenase, and androgen receptor in the human prostate by in situ hybridization and immunocytochemistry. Endocrinology 1999;140:1481–91.

32. Labrie F, Belanger A, Cusan L, Candas B. Physiological changes in dehydroepiandrosterone are not reflected by serum levels of active androgens and estrogens but of their metabolites: intracrinology. J Clin Endocrinol Metab 1997;82:2403–9.

33. Kuiper GG, Carlsson B, Grandien K, et al. Comparison of the ligand binding specificity and transcript tissue distribution of estrogen receptors alpha and beta. Endocrinology 1997;138:863–70.

34. Roehrborn CG, Van Kerrebroeck P, Nordling J. Safety and efficacy of alfuzosin 10 mg once-daily in the treatment of lower urinary tract symptoms and clinical benign prostatic hyperplasia: a pooled analysis of three double-blind, placebo-controlled studies. BJU Int 2003;92:257–61

35. Flomax (tamsulosin hydrochloride) [prescribing information]. Ridgefield, CT: Boehringer Ingelheim Pharmaceuticals, Inc.; 2002.

36. Proscar (finasteride) [prescribing information]. Whitehouse Station, NJ: Merck & Co., Inc.; 2004.

37. Roehrborn CG, Boyle P, Nickel JC, Hoefner K, Andriole G. Efficacy and safety of a dual inhibitor of 5-alpha-reductase types 1 and 2 (dutasteride) in men with benign prostatic hyperplasia. Urology 2002;60:434–41.

38. Tscholl, R., Largo, M., Poppinghaus, H., Recker, F. and Subotic, B.: Incidence of erectile impotence secondary to transurethral resection of benign prostatic hyperplasia, assessed by preoperative and postoperative snap gauge tests. J Urol, **153:** 1491, 1995

39. Parsons CI. Impotence following transurethral resection of the prostate. In: Common problems in infertility and impotence. Rajfer J, ed. Chicago: Year Book Medical, 1990: 352– 55.

40. Rosen RC et al; The International Index of Erectile Function (IIEF); A multi dimensional scale for assessment of erectile dysfunction. Urology 1997;49;822-30.

41. Felsen D, Dardashti K, Ostad M et al. Inducible nitrite oxide synthase promotes pathophysiological consequences of experimental bladder outlet obstruction. J Urol 2003; 169: 1569– 72.

42. Eckel RH, Grundy SM, Zimmet PZ. The metabolic syndrome. Lancet 2005; 365: 1415– 28.

43. Hammarsten J, Hogstedt B, Holthuis N, Mellstrom D. Components of the metabolic syndrome-risk factors for the development of benign prostatic hyperplasia. Prostate Cancer Prostatic Dis 1998; 1: 157– 62.

44. Golomb E, Rosenzweig N, Eilam R, Abramovici A. Spontaneous hyperplasia of the ventral lobe of the prostate in aging genetically hypertensive rats. J Androl 2000; 21: 58– 64.

45. Person K, Pandita RK, Spitsbergen JM, Steers WD, Tuttle JB, Andersson KE. Spinal and peripheral mechanisms contributing to hyperactive voiding in spontaneously hypertensive rats. Am J Physiol 1998; 275: 1366– 73.

46. Malloy BJ, Price DT, Price RR, et al. Alpha1-adrenergic receptor subtypes in human detrusor. J Urol 1998;160:937–43.

47. Medina JJ, Parra RO, Moore RG. Benign prostatic hyperplasia (the aging prostate). Med Clin North Am 1999;83:1213–29

48. Reilly CM, Stopper VS, Mills TM. Androgens modulate the alphaadrenergic responsiveness of vascular smooth muscle in the corpus cavernosum. J Androl 1997;18:26–31

49. Christ GJ, Schwartz CB, Stone BA, et al. Kinetic characteristics of alpha 1-adrenergic contractions in human corpus cavernosum smooth muscle. Am J Physiol 1992;263:H15–9..

50. Buyukafsar K, Levent A, Ark M. Expression of Rho-kinase and its functional role in the contractile activity of the mouse vas deferens. Br J Pharmacol 2003;140:743–9.

51. Treatment of lower urinary tract symptoms in benign prostatic hyperplasia and its impact on sexual function. Miner M, Rosenberg MT, Perelman MA. Clin Ther. 2006 Jan;28(1);13-25.

52. AUA Practice Guidelines Committee. AUA guideline on management of benign prostatic hyperplasia (2003). Chapter 1: Diagnosis and treatment recommendations. J Urol 2003; 170: 530– 47.

ANNEXURES

ANNEXURE - 1

INSTITUTIONAL ETHICAL COMMITTEE
GOVT.KILPAUK MEDICAL COLLEGE,
CHENNAI-10
Protocol ID.No.6/10/2014
CERTIFICATE OF APPROVAL

The Institutional Ethical Committee of Govt. Kilpauk Medical College, Chennai reviewed and discussed the application for approval " A prospective study of sexual dysfunction in patients with Benign Prostatic Hyperplasia" submitted by Dr.J. Saravanan, MCh Urology, PG Student, KMC, Chennai-10.

The Proposal is APPROVED.

The Institutional Ethical Committee expects to be informed about the progress of the study any Adverse Drug Reaction Occurring in the Course of the study any change in the protocol and patient information /informed consent and asks to be provided a copy of the final report.

GOVT. KILPAUK MEDICAL COLLEGE * Kilpauk, Chennai-10. * 01 DEC 2014

CHAIRMAN,
Ethical Committee
Govt.Kilpauk Medical College,Chennai

28/11/14.

ANNEXURE - 2

PROFORMA

Name : Age : OP/IP no:

Address :

Duration of Symptoms :

Associated co-morbid illness :

Clinical details :

Investigations : USG KUB Prostate size -

PVR-

Uroflow -

LUTS assessment : IPSS Score :

Sexual function assessment :

Treatment given :

Post treatment IPSS Score :

Post treatment Sexual function assessment :

MALE SEXUAL FUNCTION SCALE

		எதிரே குறிப்பிட்டுள்ள தொந்தரவுகளால் நீங்கள் எந்த அளவு பாதிக்கப்பட்டுள்ளீர்கள் என்று (✓) குறியிட்டு காட்டவும்				
1.	கடந்த மூன்று மாத காலத்தில் நீங்கள் உடலுறவு கொண்ட போது உங்களுக்கு ஆண் குறியில் விரைப்புத்தன்மை ஏற்படுகிறதா? ☐ ஆம், முழு விரைப்புத்தன்மையுடன் ☐ ஆம், பாதி விரைப்புத்தன்மையுடன் ☐ ஆம், குறைவான விரைப்புத்தன்மையுடன் ☐ இல்லை.	பாதிக்கப் படவில்லை		ஓரளவு பாதிக்கப் பட்டுள்ளேள்		மிகவும் பாதிக்கப் பட்டுள்ளேன்
		1	2	3	4	5
2.	உடலுறவின் போது விரைப்புதன்மை முழுவதுமாக உள்ளதா? ☐ ஆம், ☐ ஆம், ஆனால் எல்லா நேரமும் இல்லை ☐ ஆம், எப்பொழுதாவது ☐ இல்லை, முழுமையாக இல்லை	1	2	3	4	5
3.	உடலுறவின் போது விந்து வெளியாகிறதா? ☐ ஆர் ☐ ஆம், ஆனால் எல்லா நேரமும் இல்லை ☐ ஆம், எப்பொழுதாவது ☐ இல்லை	1	2	3	4	5
4.	விந்து வெளியாவது தாமதமாகிறது? ☐ இல்லை, ☐ ஆம், ஆனால் எல்லா நேரமும் இல்லை ☐ ஆம், எல்லா நேரமும் ☐ விந்து வெளியாகவில்லை	1	2	3	4	5
5.	விந்து சீக்கிரமாக வெளியாகிறதா? ☐ இல்லை, ☐ ஆம், ஆனால் எல்லா நேரமும் இல்லை ☐ ஆம், எல்லா நேரமும் ☐ விந்து வெளியாகவில்லை	1	2	3	4	5
6.	உங்களுக்கு உடலுறவில் எந்த அளவு ஆர்வம் இருக்கிறது? ☐ ஆம் எப்பொழுது போலும் ☐ எப்பொழுதையும் விட குறைவாக ☐ எப்பொழுதையும் விட மிககுறைவாக ☐ ஆர்வமே இல்லை	1	2	3	4	5
7.	உங்கள் உடலுறவு வாழ்க்கை திருப்திகரமாக உள்ளதா? ☐ ஆம், மிகவும் திருப்திகரமாக உள்ளது ☐ ஆம், திருப்திகரமாக உள்ளது ☐ இல்லை, திருப்திகரமாக இல்லை, ☐ மிகவும் திருப்திகரமாக இல்லை,					
8.	கடந்த மூன்று மாதங்களில் உடலுறவு சம்மந்தமான தொந்தரவுகளால் எந்த அளவு பாதிக்கப்பட்டுள்ளீர்கள்? ☐ மிகவும் ☐ ஓரளவு ☐ சிறிதளவு ☐ மிகவும் சிறிதளவு ☐ பாதிக்கப்படவில்லை.					

IPSS - INTERNATIONAL PROSTATE SYMPTOM SCORE SHEET

பிராஸ்டேட் சிகிச்சை தொடங்கும் முன்பாக IPSS அறிகுறிகள் உங்களுக்கு எந்த அளவிற்கு இருக்கிறது என அறிந்து கொள்ள இது உதவியாய் இருக்கும்.

கீழே கொடுக்கப்பட்டுள்ள ஒவ்வொன்றிலும் உங்கள் எண்ணிக்கையின் மீது வட்டமிடவும்.

	ஒரு போதும் இல்லை	5க் 1 தடவைக்கு குறைவாக	அரை தடவைக்கு குறைவாக	கிட்டத்தட்ட அரை தடவை	அரை தடவைக்கும் அதிகமாக	கிட்டத்தட்ட எப்போதும்
1. கடந்த ஒரு மாத காலத்தில் நீங்கள் சிறுநீர் கழித்து முடித்த பின்பு இன்னும் சரியாக போகவில்லை என்ற உணர்வுக்கு எத்தனை முறை உள்ளாகியிருக்கிறீர்கள் ?	0	1	2	3	4	5
2. கடந்த ஒரு மாத காலத்தில் நீங்கள் சிறுநீர் கழித்த பின்பு இரண்டு மணி நேரத்திற்கு முன்பாக மீண்டும் எத்தனை தடவை சிறுநீர் கழிக்க வேண்டி வந்தது ?	0	1	2	3	4	5
3. கடந்த ஒரு மாத காலத்தில் நீங்கள் சிறுநீர் கழிக்கும்போது நின்று நின்று பல முறை கழிக்கும்படி எவ்வாறு தடை ஏற்பட்டது ?	0	1	2	3	4	5
4. கடந்த ஒரு மாத காலத்தில் சிறுநீர் கழிப்பதை ஒத்திப் போடுவதில் உங்களுக்கு சிரமம் இருந்ததா ?	0	1	2	3	4	5
5. கடந்த ஒரு மாத காலத்தில் எத்தனை தடவை மந்தமாக சிறுநீர் கழிப்பதாக உணர்ந்தீர்கள் ?	0	1	2	3	4	5
6. கடந்த ஒரு மாத காலத்தில் சிறுநீர் கழிக்க எத்தனை தடவை முக்கி முயன்று கஷ்டப்பட வேண்டி இருந்தது ?	0	1	2	3	4	5
7. கடந்த ஒரு மாத காலத்தில் நீங்கள் இரவு படுக்கைக்குச் சென்று காலையில் எழுந்திருக்கும் வரையில் எத்தனை தடவை சிறுநீர் கழிக்க எழுந்திருக்க வேண்டி இருந்தது ?	0	1	2	3	4	5
	ஒரு போதும் இல்லை	1 தடவை	2 தடவை	3 தடவை	4 தடவை	5 அல்லது அதிக தடவை
	0	1	2	3	4	5

இங்கே உங்கள் எண்ணிக்கையை கூட்டவும்

மொத்த அறிகுறி எண்ணிக்கை = மேலுள்ளவரிசை மொத்தம் 1 முதல் 7 = ☐

மேலும் விவரமறிய உங்கள் டாக்டரிடம் கலந்தாலோசிக்கவும்

சிறுநீர் கழிக்கும் பாதிப்பினால் வாழ்கை தர பாதிப்பு உங்கள் வாழ்க்கையின் மீது நாட்களை இப்போது இருக்கும் சிறுநீர் கழிக்கும் நிலையிலேயே தொடர்ந்து உங்களுக்கு சம்மதம் இருக்கும் ?	மிக்க மகிழ்ச்சி 0	மகிழ்ச்சி 1	மிக்க திருப்தி 2	கலந்த உணர்வு 3	திருப்தி இல்லை 4	வருத்தம் 5	தாங்க முடியா-நிலை 6

ANNEXURE 3

சுய ஒப்புதல் படிவம்

ஆய்வு செய்யப்படும் தலைப்பு:

சிறுநீரக அறுவை சிகிச்சை பிரிவு

கீழ்ப்பாக்கம் மருத்துவக் கல்லூரி

பங்கு பெறுபவரின் பெயர்

பங்கு பெறுபவரின் எண்

பங்கு பெறுபவர் இதனை (√) குறிக்கவும்

மேலே குறிப்பிட்டுள்ள மருத்துவ ஆய்வின் விவரங்கள் எனக்கு விளக்கப்பட்டது. என்னுடைய சந்தேகங்களை கேட்கவும், அதற்கான தகுந்த விளக்கங்களை பெறவும் வாய்ப்பளிக்கப்பட்டுள்ளது என அறிந்து கொண்டேன். ☐

நான் இவ்வாய்வில் தன்னிச்சையாக தான் பங்கேற்கிறேன். எந்த காரணத்தினாலோ எந்த சட்டசிக்கலுக்கும் உட்படாமல் நான் இவ்வாய்வில் இருந்து விலகி கொள்ளலாம் என்றும் அறிந்தும் கொண்டேன். ☐

இந்த ஆய்வு சம்பந்தமாகவோ, இதை சார்ந்து மேலும் ஆய்வு மேற்கொள்ளும் போதும் இந்த ஆய்வில் பங்கு பெறும் மருத்துவர் என்னுடைய மருத்துவ அறிக்கைகளை பார்ப்பதற்கு என் அனுமதி தேவையில்லை என அறிந்து கொள்கிறேன். ☐

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவலையோ, முடிவையோ பயன்படுத்திக் கொள்ள மறுக்கமாட்டேன். ☐

இந்த ஆய்வில் பங்கு கொள்ள ஒப்புக் கொள்கிறேன். ஆய்வை மேற்கொள்ளும் மருத்துவ அணிக்கு உண்மையுடன் இருப்பேன் என்றும் உறுதியளிக்கிறோன். ☐

இந்த ஆய்வில் ஒருமுறை 5 மி இரத்தம் பரிசோதனைக்காக எடுத்துக் கொள்ளப்படும் என்பதை அறிவேன். ☐

பங்கேற்பவரின் கையொப்பம்_____இடம் _____

தேதி இடம் _____தேதி_____

பங்கேற்பவரின் பெயர் மற்றும் விலசம்
சாட்சியாளரின் கையொப்பம்

இடம் _____ தேதி _____
சாட்சியாளரின் பெயர் மற்றும் விலாசம்

ஆய்வாளரின் கையொப்பம்
இடம் _____ தேதி _____

ஆய்வாளரின் பெயர் _____

ANNEXURE - 4

MASTER CHART

MASTER CHART

S.No	Name	IP NO	age	LUTS	DRE	Prostate	LUTS score	LUTS	PRE TREATMENT					TREATMENT	POST TREATMENT	
									ED	EJD	DESIRE	SATIS - FACTION	BOTHER		ED	EJD
1	Mr.Palani	1422033	53	6 mths	gr 1	34cc	5	Mild	0	0	0	1	0	Medical	1	0
2	Mr.Mani	1422160	55	8mths	gr 1	35cc	12	mod	3	1	1	1	0	TURP	1	2
3	Mr.Subramani	1422760	62	2 yrs	gr 1	32cc	6	mild	0	0	0	1	0	Medical	2	0
4	Mr.Govindhan	1422790	52	1 yr	gr 1	35cc	5	mild	0	0	0	1	0	Medical	0	0
5	Mr.Vasu	1422813	56	8 mths	Gr2	42cc	24	severe	3	2	3	2	4	TURP	2	2
6	Mr.Kandhasamy	1426510	63	1 yr	gr 1	36cc	6	mild	0	0	0	1	0	TURP	0	2
7	Mr.Kanniappan	1426981	53	2 yrs	gr 1	32cc	5	mild	0	0	1	1	2	Medical	1	0
8	Mr.Ramasamy	1427404	55	6 mths	gr 1	34cc	12	mod	3	1	1	2	2	TURP	1	2
9	Mr.Govindaraj	1427638	65	2 yrs	gr 1	32cc	6	mild	1	0	0	1	1	TURP	2	2
10	Mr.Krishnan	1427712	57	1 yr	gr 1	34cc	5	mild	1	0	1	1	1	TURP	1	1
11	MrKannaiyan	1427715	58	8 mths	Gr2	46cc	24	severe	3	2	3	3	4	TURP	2	2
12	Mr.Rajendiran	1429124	66	6 mths	gr 1	34cc	14	mod	4	1	0	1	2	TURP	2	2
13	Mr.Punniyamoorthy	1429823	52	2 yrs	gr 1	34cc	6	mild	0	0	0	1	0	Medical	1	0
14	Mr.ramasamy	1435127	54	1yr	gr 1	42cc	15	mod	3	1	2	2	2	TURP	1	2
15	Mr.Kannappan	1435048	62	6 mths	gr 1	34cc	13	mod	2	0	0	1	0	Medical	1	1
16	Mr.Ponnusamy	1435127	53	8 mths	Gr2	32cc	23	severe	4	2	3	3	3	TURP	2	3
17	Mr.Duraisamy	1435978	55	6 mths	gr 1	34cc	14	mod	3	0	1	1	0	Medical	2	0
18	Mr.Thulsidass	1436123	73	2yrs	gr 1	42cc	5	Mild	1	0	0	2	0	Medical	1	0
19	Mr.Thennavan	1436423	57	3 mths	Gr2	46cc	26	severe	3	2	3	2	4	TURP	2	2
20	Mr.Kuppusamy	1436823	58	6 mths	gr 1	34cc	15	mod	1	0	1	1	2	TURP	1	2
21	Mr.Chottilal	1437270	75	8 mths	gr 1	34cc	16	mod	2	0	0	2	0	TURP	1	3

22	Mr.David	1437298	53	2yrs	gr 1	32cc	14	mod	3	1	2	1	0	TURP	2	2
23	Mr.Panchatcharam	1437328	54	1yr	Gr2	46cc	24	severe	4	3	2	2	2	TURP	2	3
24	Mr.Rajendiran	1437439	77	8mths	gr 1	34cc	14	mod	3	0	2	4	4	TURP	2	3
25	Mr.Tikkaram	1437619	62	6mths	gr 1	32cc	16	mod	2	0	0	1	0	Medical	1	1
26	Mr.Veeramani	1440735	64	2yrs	Gr2	42cc	22	severe	3	3	3	2	4	TURP	2	3
27	Mr.Muniyan	1440768	65	2yrs	gr 1	34cc	16	mod	3	3	0	2	1	TURP	1	2
28	Mr.Panneer	1440800	79	1yr	gr 1	32cc	14	mod	3	0	2	3	3	TURP	-	-
29	Ramasamy	1440810	62	6mths	gr 1	34cc	13	mod	2	0	0	1	0	Medical	2	0
30	Mr.Penicillaya	1440825	63	8mths	Gr2	46cc	24	severe	3	0	1	1	0	TURP	2	2
31	Mr.David	1440985	67	3mths	gr 1	42cc	16	mod	4	0	3	1	2	TURP	3	2
32	Kailasam	18530	69	1yr	gr 1	34cc	25	severe	4	3	3	4	3	TURP	2	3
33	Mr.Dhasthagiri	18686	75	8mths	gr 1	32cc	14	mod	2	0	1	2	1	TURP	2	3
34	Raman	18701	65	6mths	gr 1	34cc	16	mod	3	0	0	1	2	TURP	2	2
35	Mr.Ponnusamy	18589	66	4mths	gr2	43cc	28	severe	4	3	4	3	4	TURP	2	2
36	Kannan	18721	68	6mths	gr 1	34cc	14	mod	1	0	0	1	3	TURP	3	3
37	Mr.Swapan mandal	18734	77	2yrs	Gr2	46cc	24	severe	3	1	2	2	0	TURP	2	3
38	Mr.Subbaiyan	18790	62	1yr	gr 1	34cc	14	mod	3	2	1	1	0	TURP	1	2
39	Ganeshan	18834	64	8mths	Gr2	42cc	25	severe	3	0	2	1	0	TURP	-	-
40	Mr.Kanniappan	18884	68	6mths	gr 1	34cc	16	mod	1	1	0	1	3	TURP	2	3
41	Mr.Loganathan	19130	79	8mths	Gr2	46cc	24	severe	3	4	3	3	2	TURP	-	-
42	Vijayan	20078	65	2yrs	Gr2	48cc	26	severe	3	0	2	1	2	TURP	2	2
43	Nazeer	20234	67	8mths	gr 1	34cc	15	mod	4	0	0	1	2	TURP	3	2
44	Chinnayan	20456	69	6mths	Gr2	46cc	24	severe	4	3	3	4	3	TURP	2	4
45	Kannappan	20968	72	4mths	Gr2	42cc	26	severe	4	3	3	3	0	TURP	2	3
46	Mr.Birbal	21697	83	8mths	Gr2	48cc	28	severe	3	1	3	3	2	Medical	2	0
47	Mr.Thangaraju	21890	65	2yrs	Gr2	46cc	27	severe	3	0	2	1	2	TURP	1	2
48	Mr.Selvaraj	21929	67	1yr	Gr2	48cc	25	severe	4	3	4	3	3	TURP	3	2
49	Ganapathy	22345	68	4mths	Gr2	42cc	26	severe	4	3	3	3	3	TURP	2	3
50	Thiruppathi	22456	75	3yrs	Gr2	46cc	27	severe	4	3	3	3	2	TURP	-	-
51	Viswanathan	22867	66	6mths	Gr2	48cc	25	severe	4	3	4	3	3	TURP	2	2
52	Surendran	23453	64	2yrs	Gr2	42cc	28	severe	3	0	2	1	0	TURP	1	2

53	Saravanan	23970	62	8mths	Gr2	46cc	24	severe	3	3	3	2	4	TURP	1	3
54	Mr.Selvaraj	24178	77	6mths	Gr2	48cc	25	severe	3	3	3	3	2	TURP	-	-
55	Mr.Annamalai	24890	62	2yrs	Gr2	42cc	27	severe	3	3	1	1	4	TURP	2	3
56	Rajendiran	25101	63	6mths	Gr2	46cc	28	severe	3	3	3	2	4	TURP	2	3
57	Mr.Srinivasan	25339	65	4mths	Gr2	48cc	25	severe	3	0	3	2	4	TURP	1	2
58	Thulsidoss	25420	79	8mths	Gr2	46cc	27	severe	3	0	3	3	2	TURP	-	-
59	Mr.Arumugam	25587	62	2yrs	Gr2	42cc	28	severe	3	4	3	2	4	TURP	2	3
60	Mr.Kannaiyan	25621	64	1yr	Gr2	48cc	25	severe	3	3	3	2	4	TURP	2	2
61	Kuppusamy	25678	56	6mths	gr 1	34cc	6	mild	1	0	1	1	0	TURP	1	1
62	Mr.Parasuraman	25879	58	2yrs	Gr2	46cc	24	severe	2	1	3	2	4	TURP	2	2
63	Mr.Loganathan	26545	63	8mths	gr 1	32cc	15	mod	3	1	0	1	0	TURP	1	2
64	Aanandhan	26562	52	2yrs	gr 1	34cc	17	mod	3	0	2	2	2	Medical	3	0
65	Mr.Varadhan	26421	54	6mths	Gr2	46cc	24	severe	3	3	2	2	2	TURP	1	2
66	MrJohn Prakash	26450	64	4mths	gr 1	32cc	15	mod	3	0	2	1	0	TURP	1	2
67	Kuppannan	26429	53	8mths	gr 1	34cc	6	Mild	2	0	1	1	0	Medical	3	0
68	Mr.Karuppan	26579	55	2yrs	gr 1	32cc	16	mod	3	0	1	2	2	TURP	1	2
69	Mr.Ponnan	26680	67	6mths	gr 1	42cc	14	mod	1	0	0	1	2	TURP	2	2
70	Ganeshan	26831	52	8mths	gr 1	34cc	6	mild	2	0	0	1	0	Medical	2	0
71	Mr.Balasubramanian	26830	56	2yrs	Gr2	46cc	24	severe	3	2	3	2	4	TURP	2	2
72	Mr.Raman	26859	81	6mths	gr 1	32cc	16	mod	1	0	1	2	0	Medical	2	0
73	Mr.Ramanujam	26987	55	4mths	gr 1	34cc	14	mod	3	0	1	1	0	TURP	1	2
74	Rajan	27125	58	2yrs	Gr2	46cc	27	severe	2	2	4	4	4	TURP	1	3
75	Mr.Velmurugan	1425314	72	4mths	gr 1	32cc	5	mild	1	0	0	1	0	Medical	2	0
76	Mr.Ganeshan	1425370	64	6mths	gr 1	34cc	16	mod	3	0	0	1	0	TURP	-	-
77	Mr.Kanniappan	1423889	72	4mths	gr 1	32cc	17	mod	4	0	3	3	4	TURP	2	3
78	Mr Francis	1426610	65	2yrs	gr 1	34cc	14	mod	3	0	3	2	4	TURP	2	2
79	MR.Krishnan	1426672	67	6mths	Gr2	46cc	24	severe	4	3	0	3	2	TURP	2	2
80	Mr.Subramani	1429398	68	4mths	gr 1	32cc	15	mod	1	1	0	1	3	TURP	1	3
81	MR.Moorthy	1429621	75	8mths	gr 1	34cc	17	mod	2	0	1	2	0	TURP	-	-
82	Mr.Narayanan	1432063	65	6mths	gr 1	32cc	14	mod	3	0	0	1	2	TURP	2	2
83	Mr.Jeyalal48	1431138	64	2yrs	gr 1	42cc	26	severe	3	0	2	1	1	TURP	1	2

84	Mr.Ramesh	1433348	63	8mths	gr 1	34cc	14	mod	3	0	0	1	0	TURP	2	2
85	Mr.Kareem Bai	1433550	76	4mths	gr 1	32cc	12	mod	3	0	1	1	0	TURP	-	-
86	Mr.Ganesh	1433647	62	6mths	Gr2	42cc	27	severe	3	0	3	2	4	TURP	-	-
87	Mr.Sadaiyappan	1433521	61	2yrs	gr 1	34cc	14	mod	2	0	0	1	0	Medical	2	0
88	Mr.Krishnamoorthy	1433590	65	4mths	Gr2	46cc	26	severe	3	0	3	2	0	TURP	1	2
89	Mr.Perumal	1434156	74	8mths	gr 1	32cc	16	mod	2	0	0	1	0	TURP	-	-
90	Mr.Ponmuthan	1435061	66	6mths	Gr2	48cc	24	severe	4	3	4	3	4	TURP	2	2
91	Mr.Perumal	1437781	62	4mths	Gr2	46cc	28	severe	3	3	3	2	4	TURP	1	3
92	Mr.Gopalan	1437839	63	8mths	Gr2	42cc	25	severe	3	3	3	2	4	TURP	1	3
93	Mr.Gunalan	1438591	65	2yrs	gr 1	34cc	26	mod	3	0	0	1	2	TURP	1	2
94	Mr.Ramachandran	1431337	73	6mths	Gr2	48cc	22	severe	4	3	4	3	4	TURP	3	4
95	Mr.Kannappan	1431478	66	4mths	Gr2	46cc	27	severe	4	3	0	3	2	TURP	2	2
96	Mr.Anandhan	1432403	68	8mths	gr 3	48cc	25	severe	4	3	3	3	3	TURP	2	3
97	Mr.Kuppan	1432501	62	2yrs	gr 1	42cc	15	mod	3	0	0	1	0	TURP	1	2
98	Mr.Thangaraj	1433811	75	6mths	Gr2	48cc	26	severe	4	3	4	3	2	TURP	2	4
99	Mr.Abdul rehman	1433980	63	4mths	Gr2	46cc	24	severe	3	0	1	1	0	TURP	2	2
100	Mr.Kasinathan	1434076	65	2yrs	gr 1	34cc	16	mod	3	0	0	1	2	TURP	1	2
101	MrNarayanan	1430420	67	6mths	Gr2	42cc	27	severe	4	3	3	3	3	TURP	3	3
102	Mr.Raman	1430651	78	8mths	Gr2	46cc	25	severe	3	0	2	4	4	TURP	2	3
103	Mr.Babu	13290	68	2yrs	Gr2	48cc	24	severe	4	3	3	3	3	TURP	3	3
104	Mr.Kannan	14580	64	4mths	gr 1	34cc	16	mod	3	0	0	1	1	TURP	2	2
105	Mr.Kumaran	14671	64	6mths	Gr2	46cc	26	severe	3	0	2	2	4	TURP	1	2
106	Mr.Balan	14712	66	4mths	Gr2	48cc	28	severe	4	3	4	3	3	TURP	3	2
107	Mr.Karunakaran	15213	76	8mths	Gr2	46cc	24	severe	4	1	3	3	2	TURP	2	3
108	Sivanesan	15658	67	2yrs	Gr2	42cc	26	severe	4	3	3	3	3	TURP	-	-
109	Mr.Srinivasan	16529	68	6mths	Gr2	46cc	27	severe	4	3	0	4	3	TURP	3	3
110	Mr.Habeeb rehman	18016	65	4mths	Gr2	48cc	28	severe	3	0	3	3	4	TURP	1	2
111	Mr.Murugesan	18593	63	8mths	Gr2	46cc	24	severe	3	0	1	1	0	TURP	1	2
112	Mr.Viswanathan	18577	62	2yrs	Gr2	42cc	26	severe	3	3	3	2	4	TURP	2	3
113	Mr.Arokiyam	20149	64	6mths	Gr2	46cc	28	severe	3	3	3	2	4	TURP	2	2
114	Mr.Gunasekaran	21397	69	4mths	gr 3	58cc	25	severe	4	3	3	1	3	TURP	2	4

115	Mr.Bhaskaran	21924	61	2yrs	Gr2	48cc	27	severe	3	2	1	1	0	Medical	2	0
116	Mr.Selvaraj	21930	64	8mths	Gr2	44cc	24	severe	3	3	3	2	3	TURP	1	2
117	Mr.Ramachandran	21847	66	6mths	Gr2	46cc	28	severe	4	3	0	3	2	TURP	3	2
118	Mr.Nalliah	21921	68	2yrs	gr 3	54cc	22	severe	4	3	3	4	3	TURP	3	4
119	Mr.Ezhumalai	22489	67	8mths	Gr2	48cc	25	severe	4	3	0	3	3	TURP	3	3
120	Mr.Balasubramanian	28320	68	6mths	Gr2	45cc	23	severe	4	3	3	4	3	TURP	3	4

Codes :

DRE : Gr 1 : Grade 1 , Gr2 : Grade 2 , Gr 3 : Grade 3

LUTS Score : Mild : 1- 7 , Moderate : 8-19 , Severe : 20-35

ED : None -0 , Very mild -1 , Mild -2 , Moderate -3 , Severe -4

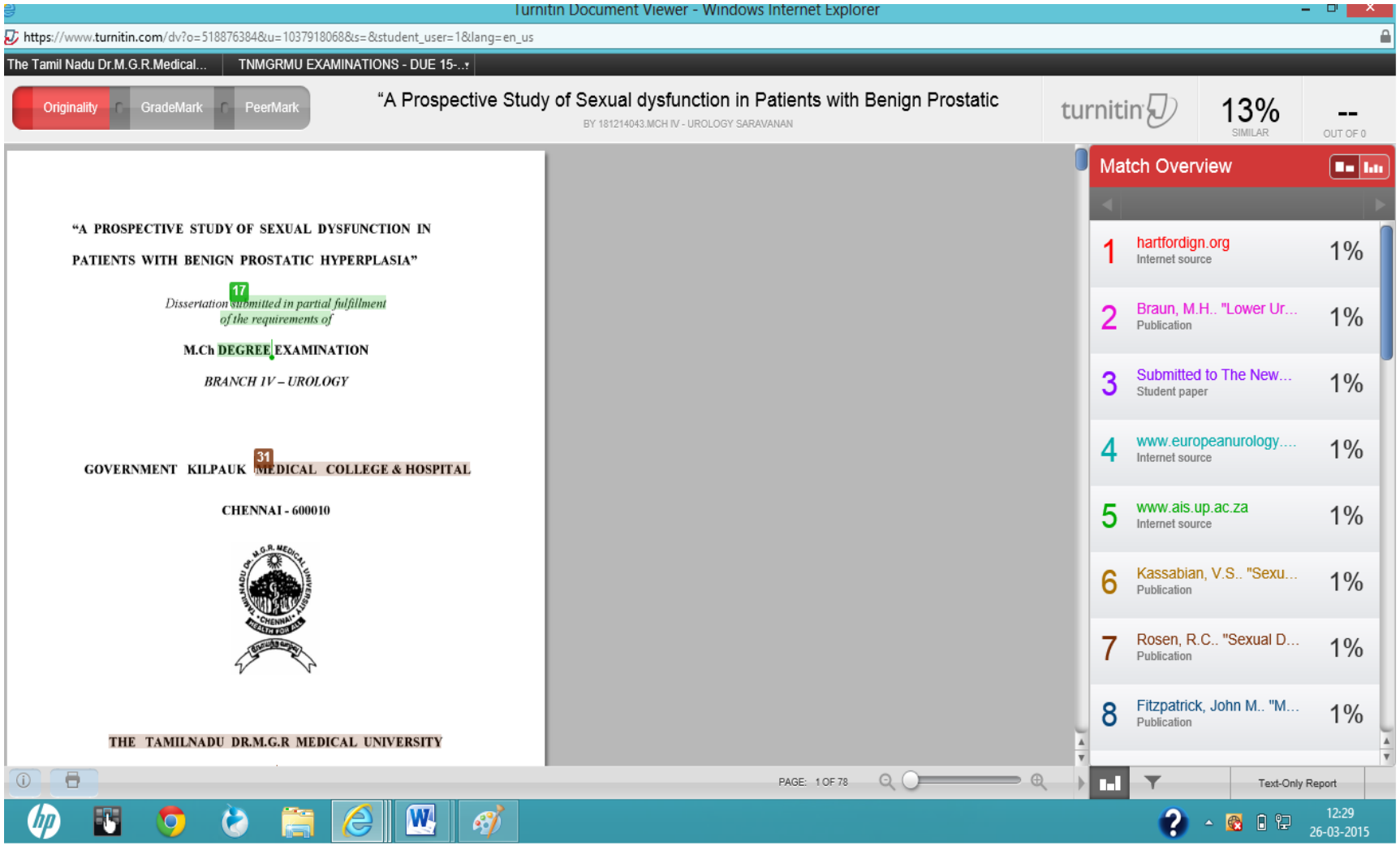
EjD : None -0 , Very mild -1 , Mild -2 , Moderate -3 , Severe -4

Sexual desire : None -0 , Very mild -1 , Mild -2 , Moderate -3 , Severe -4

Satisfaction : Full satisfaction – 1 , Mild dissatisfaction -2 , Moderate dissatisfaction -3 , Total dissatisfaction -4

Overall bother : None -0 , Very mild -1 , Mild -2 , Moderate -3 , Severe -4

ANNEXURE - 5


Turnitin Document Viewer - Windows Internet Explorer
https://www.turnitin.com/dv?o=5188763848&u=1037918068&s=&student_user=1&lang=en_us
The Tamil Nadu Dr.M.G.R.Medical...
TNMGRMU EXAMINATIONS - DUE 15-...
Originality
GradeMark
PeerMark
"A Prospective Study of Sexual dysfunction in Patients with Benign Prostatic
BY 181214043.MCH IV - UROLOGY SARAVANAN
turnitin
13%
SIMILAR
--
OUT OF 0
"A PROSPECTIVE STUDY OF SEXUAL DYSFUNCTION IN
PATIENTS WITH BENIGN PROSTATIC HYPERPLASIA"
Dissertation submitted in partial fulfillment
of the requirements of
M.Ch DEGREE EXAMINATION
BRANCH IV – UROLOGY
GOVERNMENT KILPAUK MEDICAL COLLEGE & HOSPITAL
CHENNAI - 600010
THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY
Match Overview
1 hartfordign.org Internet source 1%
2 Braun, M.H.. "Lower Ur... Publication 1%
3 Submitted to The New... Student paper 1%
4 www.europeanurology.... Internet source 1%
5 www.ais.up.ac.za Internet source 1%
6 Kassabian, V.S.. "Sexu... Publication 1%
7 Rosen, R.C.. "Sexual D... Publication 1%
8 Fitzpatrick, John M.. "M... Publication 1%
PAGE: 1 OF 78
Text-Only Report
12:29
26-03-2015